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ARCHEOLOGICAL RESEARCHES ON THE PACIFIC COAST OF COSTA RICA.

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PREFATORY NOTE.

In the beginning of the year 1903 I had the good fortune to be called to assume the Curatorship of the Section of Ethnology and Archeology at the Carnegie Museum in Pittsburgh, and shortly afterwards I laid before the Director of the institution, Dr. W. J. Holland, a plan to resume the archeological investigations I had previously started in Costa Rica. My proposal was approved and a liberal appropriation was made for the work.

My former investigations in Central America were carried out under the auspices of the Swedish Anthropological Society and embraced archeological and ethnological work in the Republics of Costa Rica, Salvador, and Guatemala during three years, 1896–1899. The collections made during this exploration were afterwards presented to the Royal Ethnographical Museum by my countryman, Mr. Åke Sjögren, who had supplied the funds for the field-work and for a publication, which I in the year 1901 issued at that Museum under the title “Archæological Researches in Costa Rica.” In this volume are embodied the main results of the archeological investigations on the Atlantic coast and the upland districts of Costa Rica.

At the time of my departure from Puntarenas, however, I made up my mind to return some day in the future in order to more thoroughly follow up the promising

investigations there started. The splendid facilities offered by the Carnegie Museum made it possible for me to continue the work in Costa Rica, and obtain additional data and material.

In March 1903 I went down to Costa Rica for the second time and spent altogether seven months in archeological researches in various parts of the republic. During this stay I revisited several of the localities described in my previous work and carried on excavations at Las Guacas on the Pacific slope and at three newly discovered sites of burial grounds on the plains of the highlands. On the Atlantic coast my stay was limited to a short visit to the ancient settlement of Mercedes. One of the results obtained during my sojourn in Costa Rica was the purchase for the Carnegie Museum of the three largest private collections ever made in that country, two of these being the property of Padre José Maria Velasco of Santa Cruz, representing the cultures of the Pacific Coast, the third belonging to the estate of Sr. Don Juan Troyo of Cartago, containing objects from the highlands. To these were added several smaller purchases. Altogether the archeological material thus secured for the Carnegie Museum exceeds in number and types that of all other museums combined, save only the collection of the National Museum of Costa Rica at San José.

In this and forthcoming Memoirs I propose to present not only the principal results obtained during my own work in the field in Costa Rica, but also to supplement these with illustrations and descriptions of a series of the most important types of the ancient artefacts, selected from the extensive collections I purchased for the Carnegie Museum, and also from the rich material of the Museo Nacional in San José, which by the courtesy of the Director of the latter institution was placed at my disposal for study and reproduction. I thus hope to make accessible to the student of American archeology and art a selection of the most interesting ancient artefacts which have been brought to light by myself as well as by others in this comparatively little known part of Central America.

In the present Memoir after a short historical introduction, there are given the observations and results obtained during my own excavations in the fall of 1903 at Las Guacas, the most important ancient cemetery as yet discovered on the Pacific Coast of Costa Rica. Then follows an account of a representative selection of the various stone implements contained in the collections which Padre J. M. Velasco previously had obtained at the same place. This part deals with implements of stone which are classified in two groups: (1) *Tools and weapons*, as metates, celts, axes, bark-scrapers, polishing-stones, and various other objects of a utilitarian character; (2) *Objects of ornamental and ceremonial use*, as banner-stones or maces, amulets, tubes, beads, ear-plugs, and various other small stone artefacts.

In a second Memoir it is my wish to describe ceramics representing the "Las Guacas" culture, and also to illustrate the articles made of metal, shell, bone, and other material, which have been unearthed.

It is with satisfaction and the greatest pleasure that I use this opportunity to acknowledge my indebtedness and thankfulness for the courteous treatment and hospitality shown me everywhere during my travels in Costa Rica by the cultivated inhabitants of this prosperous and peaceful republic. Special thanks for the assistance and information accorded me are due to the Minister of Public Instruction, Dr. Leonidas Pacheco, who provided me with the most effective letters of recommendation to the civil authorities, to Professor H. Pittier de Fabrega, Director of the National Museum, Messrs. Minor C., and John Keith of the United Fruit Company for the gift of valuable archeological specimens and other courtesies, the Costa Rica Railroad Company for shipping facilities, Sr. Don Mauro Fernandez, President of the Costa Rica Bank, Mr. Charles Ahl, Professor Pablo Biolley, Sr. Don Anastasio Alfaro, the late Dr. Juan F. Ferraz, Count v. Braida, Dr. José C. Zeledon, Sr. Don Juan Cooper, Sr. Don José Angel Troyo, Consul Felix Wiss, Mr. Alfred Brade, the Rev. J. M. Velasco, Sr. Don Saturnino Lizano, the Governor of Puntarenas, Srs. Don Juan J. Matarrita, Don Antonio Carillo, and several others, not named, but not forgotten. During the progress of this work I obtained the favor of the loan of a number of archeological specimens, principally objects of jade from Mexico, which have been reproduced for comparison. For this courtesy I am indebted to the owner, Mr. George G. Heye of New York City. Finally my most sincere thanks are due to the Director of the Carnegie Museum, Dr. W. J. Holland, not only for the facilities he gave me for prosecuting this work, but also for his kindness in revising the manuscript and his editorial supervision of the paper during its progress through the press.

I. ORIGINAL RESEARCHES OF THE WRITER AT LAS GUACAS, IN THE PENINSULA OF NICOYA.

I. DISCOVERY AND EARLY HISTORY OF NICOYA.

On the 25th of September, 1513, Vasco Núñez de Balboa discovered, and on the 29th he took formal possession of the Pacific Ocean for the Spanish Crown.

In the year 1519 Pedrarias Dávila, the Governor of Castilla del Oro, founded Panama and began to devote special attention to the exploration of the Pacific Coast. He sent Captain Gaspar de Espinosa northward with some ships to make discoveries along the coast. Espinosa reached the province of Burica, a little more than one hundred leagues from Panama, and from this point he returned by land

One ship, however, was sent further, and reached the entrance of the Gulf of San Lucar or Nicoya. Later on Espinosa sent out Captain Hernán Ponce de Leon with two ships and a crew of forty men, and they, following the coast, entered the same bay, which they described as being more than twenty leagues in length, filled with islands and forming a fine, well protected port, leading to the rich and beautiful province of Nicoya. In the gulf the Spanish ships were surrounded by a large number of canoes filled with armed men and on the shores were seen numbers blowing trumpets and horns and making threats and hostile signs, but after a few gunshots had been fired they all disappeared, not one being seen either on sea or land. As Hernán Ponce concluded that he could accomplish nothing further of advantage at that time, he returned to Panama.

In 1522 Gil Gonzáles de Ávila traversed all the territory of Costa Rica from ocean to ocean and then visited the island of Chira in the Gulf of Nicoya.

The following year Francisco Fernádes de Córdova, the conqueror of Nicaragua, founded the city of Bruselas near the Gulf of Nicoya, this being the first colony established in Costa Rica. As was customary at that time, the Indians of the surrounding provinces, Nicoya, Chira, and Güetares, were distributed among the residents of the colony.

In 1527 Pedrarias Dávila was nominated Governor of the province of Nicaragua without any definite limits to his territory, but in fact he had under his command all the Indians of Nicoya, Chira, and other districts of the Gulf.

In 1529 the historian, Gonzalo Fernádes de Oviedo y Valdés, visited the pueblo and Gulf of Nicoya. From his pen we have the most complete and satisfactory early description of the manners and customs of the Indians of Nicoya and those of the islands of the Gulf. Only the principal details can here be given.

The men were either naked or wore a breech-cloth made of a belt of cotton. The women also used belted breech-cloths and besides, in some parts, sleeveless cotton shirts. The belts were adorned with designs in many colors. The men wore their hair either in one braid hanging down the back, or tied together in a knot standing straight up from the crown. The women also wore the hair in the latter way, but more usually parted in the middle, and laid up in a large knot above each ear. As ornaments these Indians used necklaces of beads made of "pie de burro" (*Carica* sp.) and other sea-shells. They also used labrets of bone, or hammered gold. These labrets could be removed when they took their meals. Their arms were decorated with tattooings principally representing the jaguar. They were fine archers, used spears and clubs, and in time of war trumpets and horns. The walls of the houses were of poles, and the roofs were thatched with palm-leaves.

In the interior they had small benches called "duhos." They used canoes and rafts of poles on the Gulf, making their living to a great extent by fishing. Oysters and other shell-fish were among their principal foods. The large flat shells of the pearl-oysters were inserted in double rows as oarblades and were also used as shovels for work in the fields. They were great hunters, principally killing deer and wild hogs. They planted corn and beans of various kinds, and had large plantations of cacao and other fruit-trees. Cacao was copiously used at their feasts, being colored with the red seeds of the *achiote*, or arnotto (*Bixa orellana* Linnæus), so that it resembled blood. At the festivals an intoxicating beer of corn was also copiously used and the rolled leaves of tobacco were smoked. On the island of Chira it is especially mentioned that the Indians made "very fine pottery, as pitchers and plates, cups, vases, and other vessels, all beautifully shaped, black as fine velvet, highly polished, of jet lustre, well worthy to be used as gifts for princes."

All their villages in the middle had squares, or market-places, for the sale of commodities. On the squares near the sacrificial mound were erected their temples and small houses for the idols, of which they had a great number, made either of clay or wood. They set apart for their gods special festival-days, celebrated with dances and songs especially during the time of the cacao- and bean-harvests. In Nicoya, three times a year, on days considered as great festival-days, the cacique of Nicoya, his principal chiefs, and most of the people, both men and women, decked out with a great display of feathers, and adorned and painted in their peculiar fashion, performed a dance consisting of counter-paces in a circle. The women grasping each other by the hands, or hooking arms, formed a circle around the sacrificial mound and at an interval of four or five steps the men formed another circle around them. In the aisle thus formed between them other Indians walked back and forth serving the dancers with drinks. Both men and women made swaying motions with their bodies and heads and drank the beer without stopping the motion of their feet. This dance was continued for four hours or more in front of their great temple on the principal square. At its conclusion the man or woman previously chosen for sacrifice was led to the top of the mound, his left side opened, his heart was torn out and the first drops of the blood were sacrificed to the sun. Immediately afterwards the victim and four or five others were beheaded on a stone placed on the top of the mound and their blood offered up to the idols and gods. The priests or executioners then anointed their lower lips and faces with the blood. Finally the bodies were thrown down the slope of the mound, and afterwards taken up and eaten as sacred and very precious food. At the moment the sacrifice was

finished all the women present raised a loud cry and fled to the woods and mountains hiding themselves.

The ceremonies and rites thus resembled those of the Mexicans, the stage of civilization being barbaric. These Indians, like the Mexicans, had folded books made of parchment of deer skin. In these they painted characters and figures in red or black ink, which 'although neither print nor script,' represented very clearly whatever they wished to record. In such books they had depicted their boundary lines, landed property, roads, rivers, mountains, woods, etc., in order thereby to determine these things in time of dispute, or litigation.

The form of government in these parts is described as differing very much in various localities. The messengers and army officers were always believed on their word. They carried in the hand a fan made of plumes. On the islands in the gulf, however, a long staff served the purpose. On the top of the staff there was a hollow shell with small pebbles inside. Fixing the lower end of this staff in the ground of the market-place, the messenger swung it back and forth producing a loud noise, and, calling on the people, he delivered his message.

As a rule a man had only one wife, but some had more, especially the chiefs. The caciques had as many as they desired and were entitled to the *jus primæ noctis*.

The largest island of the gulf, Chira, is described by Gil Gonzalez at the time of his visit as being about seven or eight leagues in circumference and as having a population of more than five hundred warriors of full age, not to mention the old men, women, and children. In front of the island of Cacho, now the island of Venado, was the people and province of Orotiña; more to the east the people and province of Chorotegua; and on the opposite side, more to the north and north-east, were the sierras and peoples called Güetares. The latter were said to be very numerous and to extend along the coast of the gulf to the frontier of the Choroteguas.

Oviedo gives the following vivid description of one of the feasts of the Choroteguas: "There are other dances in connection with which drinking is common, at which the wine is as frequent as the singing, until the participants drop dead-drunk stretched out upon the ground like hides (*hechas cuéros*). And many of those, who thus get intoxicated, remain where they happen to fall, until the effect of the wine is gone the next day. Any one seeing a companion fall rather envies than pities him, because they do not go to the feast to dance, but for the pleasure of getting drunk. Moreover, I would say, that in truth I and a priest and three or four other Spaniards who were present, would have preferred to be far away when we saw these seventy or eighty Indians with their chief drunk and a whole people so beastly and idolatrous and so steeped in vices. I am convinced that those Indians who are Christians

find no satisfaction in the truth, because, instead of being masters as they originally were, they have now been made slaves, and in their rites, ceremonies, and vices they have been encouraged. What can you expect from their friendship? Furthermore we were far from the succor and help of the Christians, and in the house of one of the chiefs of that tribe, and in a country, where the people can with impunity make attacks by land and sea against whomsoever they wish. All these things disposed us to fear. It is true that one of the caciques, who has boasted most of the friendship of the Spaniards, is the one called Nicoya, and as baptized D. Alonso, but whose Indian name is *Nambi*. When we asked him for some Indians, whose services we needed, he said: 'I have no Indians, but Christians, and if you desire Christians, I shall place them at your disposal.' We replied 'Then send us some Christians, who can do what we want.' Presently he sent us as many Indians as requested and they did what they were ordered to do."

But listen now to what follows concerning the baptism of this cacique and what his people did. It is as follows:

"On Saturday the 19th of August, 1529, the cacique D. Alonso of the province of Nicoya, who was also called Nambi, which in his native tongue, the Choroteguan, signifies *dog*, sat down on a 'duho' or small bench in the square of Nicoya, much pleased and happy, together with his most prominent men and about seventy or eighty other Indians on two other benches. Then in another part of the same square about two hours before dark eighty or a hundred Indians, who doubtless belonged to the common people, began to sing and dance in a circle. A girl then began to serve them in jicara-cups a drink made of maize, very strong and somewhat sourish, resembling in color chicken-broth, when the yolk of one or two eggs is mixed with it. And, as they began to drink, the same cacique drew forth a handful of tobacco-rolls about four inches long and as thick as a finger and made of a certain leaf rolled up and tied together with threads of the cabuya-fiber. This tobacco-plant is grown with great care on account of the effect of the leaves, and they light the roll at one end and smoke it like a pipe until it ceases burning, which may last a day. Now and then they put the end opposite the fire into the mouth and inhale the smoke for a short while, and then blow it out through the mouth and nostrils. Each of the Indians I have mentioned had one of these rolled-up leaves, which they call '*yapoquete*' and in the language of the island Haiti, or Española, '*tabacco*.'

"And the Indians, both men and women, continued to drink the above-mentioned beverage, going and coming with it, and in the course of this drinking there were brought large cups of cacao prepared as they are accustomed to drink it. Of this, however, they took only two or three draughts, passing it from hand to hand,

while they smoked, beat a kettle-drum, and danced. In this manner the feast went on till midnight, when the greater part of them fell senseless to the ground, dead-drunk. As intoxication affects men differently, some of them seemed to sleep motionless, others staggered around weeping, shouting, or kicking about them desperately. While they were in this condition, their wives and friends, or children, came, took them home, and put them to sleep in their houses, where they continued sleeping till noon the next day, and some even till the evening of the following day. Any one of this people who does not take part in these drinking-bouts is considered a man unfit for war.

“While they were weeping and shouting at the feast, it was a fearful thing to see their mad capers, and while they were getting more and more drunk we became still more apprehensive, not knowing what the end of the feast would be and that we might be exposed to great danger. The women, the wives of the most distinguished men, act in the same way by themselves. Once indeed we thought that the dance and the drunkenness were becoming dangerous to us, the six or seven Spaniards who were present, and therefore we were on the lookout, and with arms ready, for, although we were not numerous enough to defend ourselves against such odds, still we were determined to sell our lives very dearly, and to try to kill the cacique and as many as possible of the leading men, without whom the lower people amount to but little, being quite lost and cowardly without their leaders. When the revelry was over, I said to the cacique that since he was a Christian, and also claimed that his best men and a great part of his people were Christians, they ought not to have started this drunken bout, because a man who is dead-drunk is nothing but a dirty brute. I also reminded him of the fact he already knew, that man's best possession is reason and understanding, and that, the clearer his understanding, the greater is his advantage over other men, the more he is esteemed by others, and deserves their respect; but the more foolish, doltish, or ignorant he is, the more he resembles the beasts. I further reminded him that Christians must not do what he did, who most nights slept with a virgin, which was a great sin and abomination in the sight of the Lord, nor was it right for him to have more than one wife, and he had many, besides those virgins, whom he deflowered. He replied that he saw an evil in the drunken revelries, but that they were a custom inherited from his ancestors, and that, if he did not observe them, his people would not like it, but would consider him churlish and his conduct bad, and would leave the country. As regards the women, he said, that he would not have more than one, if it were possible, and that he thought he would be more contented with one, than with many, but that their parents gave the virgins to him and requested that he should take

them, and still others he took because they pleased him and in order to leave many children. As to deflowering the virgins, he said, that he simply did it in order to do a favor to them and their parents, for immediately the other Indians were more willing to marry them. To all this I replied, what seemed best to me, giving him to understand his error, and how all this was a very grave sin, and it was not the work of a Christian, but of an unbeliever, and he accepted what I told him and said that I gave him good advice and that he would improve little by little. But in fact his name corresponded to his works and his works to his name Nambi, which, as I have said, signifies '*dog.*'"

The above brief extracts contain in the main almost all the meager ethnological information regarding the early inhabitants of Nicoya, which the first historians of these parts of Costa Rica have furnished us.

As the few aborigines of pure, or almost pure, Indian blood, who still survive on the peninsula and near the pueblos of Nicoya and Matamboro have been almost completely absorbed by the mixed Spanish population, and have lost nearly all their primitive customs and ideas, even their language, the student of their history is now limited almost exclusively to the study of the objects hidden in the burial-grounds and mounds.

The language has long since been practically extinct in these parts. During my sojourn on the peninsula in 1897 I obtained, however, from one of the older Indians in the pueblo of Nicoya by the name of Martin Luz, then a man apparently about sixty years old, a few words of salutation, the only ones he could recall. His grandparents, who died at a very old age had still spoken the language when he was a young boy, and he informed me that a priest in the pueblo, whose name he could not remember, had made a vocabulary of the idiom. The native words noted down with the translations, as understood and given me by this Indian were: "Ká-pe-manche," *buenos días*, which salutation always was answered with the expression "Ká-pe-hue-jo," "Su-su-mú-rio," *como estamos?* "Ni-mun-gís pa-ní-ki," *como esta la familia?* "Sió," *Adios!* Other words and expressions can probably still be had from old Indians in these parts, but time never allowed me to make further inquiries in regard to the matter.

II. PREVIOUS INVESTIGATIONS ON THE PENINSULA OF NICOYA.

The first archeological material from the peninsula of Nicoya, procured by any scientific institution, consisted of a number of objects, which were included in the general Costa Rican collection of antiquities, consisting of about one thousand specimens, which by purchases from natives was brought together by the German Consul

in San José, Johann Friedrich Lahmann, and which in the year 1862 was sold to the Museum of Natural History in Bremen for the sum of ten thousand marks. Two publications founded upon part of this material have seen the light, one by Dr. Strebel,¹ the other by Professor Fischer.² The former work only describes the ceramic material from the territory of the Güetares. The latter is devoted to a study and description of all the small sculptured objects of stone, amulets, beads, tubes, etc., comprising sixty-three specimens. Most of these objects are from localities on the mainland adjoining the peninsula of Nicoya. Some eighteen specimens, however, were obtained from the province of Santa Cruz in Nicoya. There are five plates with forty-nine figures, all of which resemble objects of the typical "Las Guacas" culture.

In the year 1865 Professor Carl von Seebach visited Guanacaste and mentions the occurrence of Indian graves, but he undertook no excavations.

The first archeologist, who made any investigations in Nicoya, was the explorer of Nicaragua, Dr. J. F. Bransford, who in the year 1877, accompanied by Dr. Earl Flint, entered the peninsula from the Nicaraguan frontier, and made an exploring trip as far south as the pueblo of Nicoya. Pages 73-79 in his work "Archeological Researches in Nicaragua," are devoted to a description of his observations. He mentions the presence of stone- and shell-heaps in various localities and the discovery of ancient relics, but his investigations in Costa Rica were in no place as extensive or detailed as in Nicaragua. His relation of excavations near the pueblo of Nicoya are here quoted in full: "At the town of Nicoya a turtle-shaped whistle and two small vessels were obtained, and a little further south in the valleys among the mountains were observed many mounds and other remains of antiquity. The mounds were usually about five feet in height and forty in diameter at the base. In the road-cuts and gullies fragments of stone implements and terra-cotta were abundant. A piece of a fine long celt of tremolite was lying in the rut, broken by a cart wheel. We purchased two whistles and some little vessels in this neighborhood, and were shown the locality where they had been discovered with human bones and several metates. I employed four men at work there for half a day, and unearthed three whistles, four small vessels, and bones of several skeletons. Each body appeared to have been interred with a small earthen vessel and a whistle. This place, about a mile and a half southeast of the town, where the crest of the ridge was crossed by the road, was called Punta de Monte. The specimens were lying in red clay on a yellowish trap

¹ Strebel, Hermann. "Bericht über die Sammlung Alterthümer aus Costa Rica in Bremer Museum." — *Abh. v. Naturw. Verein zu Bremen*, VIII., 1883, p. 233-253.

² Fischer, H. "Bericht über eine Anzahl Steinsculpturen aus Costa Rica." — *Abh. v. Naturw. Verein zu Bremen*, VII, 1881, p. 152-175.

or cascajo, about four feet below the surface, and had been exposed in a cut in the road by the wash of the rainy season."

Of the objects Dr. Bransford obtained on the peninsula he has figured the two whistles mentioned in the text and on a plate sixteen objects in green stone. All these specimens resemble common types of Las Guacas. His collection is preserved in the United States National Museum in Washington.

In a publication of 1894 Sr. Don Anastasio Alfaro³ describes a tour of reconnaissance he made in a former year to the province of Guanacaste and mentions the existence of large shell-heaps, as well as other ancient remains. In conclusion he states: "In the whole of this province of Guanacaste it is a very difficult undertaking to excavate any ancient grave, for the reason that the ground is very hard and because the relics are first encountered at the depth of two to three meters and in the greatest confusion. And, as it further is not possible to know where the objects are placed, being mixed up with earth, stones, and potsherds, which the Indians used for filling up the graves, most of them upon excavation are broken to pieces."

In the year 1888 the National Museum of Costa Rica purchased for two thousand pesos a collection of 600 archeological objects brought together from various parts of the peninsula, but principally from the neighborhood of the pueblo of Nicoya, by Juan J. Matarrita, a native official who accompanied Dr. Bransford on his journey.⁴

In the following year the same institution procured the Fornera and Abruzzo Collection of some two hundred specimens from Nicoya and in the year 1894 was added a second Velasco collection of about twenty-seven hundred objects.

In 1895 Mr. Åke Sjögren, then a resident civil engineer on the Pacific coast of Costa Rica, made a journey throughout the peninsula in order to investigate mineralogical features and especially to ascertain the source of the ancient supply of jade. He carried on excavations at Indian sites in various parts, and also made a sojourn at Las Guacas, while the work of Velasco's men was there in progress. Reference to his observations are given by Thomas Wilson⁵ of the United States National Museum.

In 1897 from March to September the writer carried on excavations with six to twelve men at various burial-grounds and other ancient sites on the peninsula of Nicoya, on Chira and other islands of the Gulf as well as on the mainland near Puntarenas. The results of this work, now preserved in the Stockholm Ethnographical Museum are as yet not published.

In the year 1899 Dr. Carl Sapper entered the peninsula from Nicaragua and

³ Alfaro, Anastasio. "Antigüedades de Costa Rica," San José, Costa Rica, 1896, p. 14, 15.

⁴ Ferraz, Juan F. "Informe de Museo Nacional de Costa Rica," 1897-1898.

⁵ Wilson, Thomas. "Prehistoric Art," Annual Report U. S. National Museum, 1896, pp. 458-459.

also made a visit to Las Guacas. In a valuable paper⁶ he gives an account of his archeological observations on the peninsula, briefly describing this burial-ground and its artefacts, and making comparisons with ancient remains observed by him in other parts of Central America.

III. LAS GUACAS NEAR THE PUEBLO OF NICOYA.

The rugged forest-covered mountain-chains of the southwestern part of the peninsula of Nicoya reach a height of about six to eight hundred meters and some isolated mountain peaks rise to one thousand meters and more. About four leagues southeast of the pueblo of Nicoya, or, on account of the steep and difficult approach, half a day's ride from that place, there is on a high mountain-ridge, uniting the Cordillera de Santa Rita and the Cordillera de Canillas, a canyon and a mountain-pass named *La Quebrada de Las Guacas* on account of the ancient remains or "guacas" there found. The present settlement near the "guacas" is simply known under the name *Las Guacas*. According to information I obtained from the people now living at the spot and from old persons in the pueblo of Nicoya, professional hunters from the latter place used of old to make yearly excursions to Las Guacas where they had small "ranchos para cazar." A narrow trail was thus kept open to this spot through the forests and thickets of the mountain-slope. No one of the present inhabitants of Nicoya, however, recollects the time when Indians occupied this spot, or know about any earlier Spanish occupation of the place. According to the same informants it was about the year 1877 that two natives of Nicoya, Silvestre Rodriguez and one Villalobo began to clear the forest and first broke the ground for cultivation. Some years later the present owner, Antonio Carillo, a mulatto, purchased the right to the place. He built houses for himself and relatives, who now have cleared an extensive portion of the territory for the cultivation of sugar-cane, corn, beans, and other crops. From the green fields a fine view opens over the Gulf of Nicoya with its islands, and from the opposite side of the peninsula, the "tumbos," the thunderings of the high waves of the great ocean, are plainly heard when the wind blows from that side. In the neighborhood of Las Guacas are the headwaters of the Rio Zapotal and the Rio Tabacco, which empty their waters directly into the ocean, and Rio Blanco and Rio Camarron, which have their outflow into the Gulf of Nicoya. Heavy primeval forests surround the little settlement on all sides. These forest-covered mountain-chains are very rich in game of many species. They teem with deer, wild hogs, tapirs, jaguars, tepezcuíntle, (*Ceilogenys paca* (Linnæus)) and other animals.

⁶Sapper, Carl. "Huacas der Halb-Insel Nicoya," *Zeitschrift für Ethnologie*, 1899, Heft VI, pp. 622-632.

It was while breaking ground here that the pioneer settlers discovered the ancient burial-ground, which afterwards made the place famous in these parts. In the beginning little attention was paid to the burials. Only occasionally, when a metate was needed for some house, digging was resorted to in order to obtain one of the ancient stones. However, after the discovery of a golden ornament in the burial-ground interest was aroused, and Padre José Maria Velasco, who then lived in Nicoya, entered as a partner with Antonio Carillo in the work of excavating on a larger scale. Padre Velasco's interest for the antiquities of the peninsula had been aroused by the late Bishop B. Thiel, who on his journeys and visits always procured material for the collection he formed and afterwards devised to the Catholic Seminary in San José.

After the first collection made by Velasco had been placed in the museum in San José, the excavations were resumed by Velasco on a still larger scale, and a collection of about twenty-six hundred specimens was made and shipped to the Atlanta Cotton Exposition. This collection was afterwards deposited in the Commercial Museum in Philadelphia, and by the Director, Dr. W. P. Wilson, loaned to the Free Museum of Science and Art of the University of Pennsylvania, where it still was at the time of its purchase by the Carnegie Museum.

On my first visit to Nicoya in the year 1896 I desired to make arrangements with Velasco for securing permission to excavate at Las Guacas, but at that time no satisfactory agreement could be made. I visited the burial-ground, however, and carried on excavations at various ancient sites in the neighborhood.

Upon my return to Costa Rica for the Carnegie Museum I first of all secured from Velasco the collection, deposited in Philadelphia,⁷ and also another collection

⁷As to the importance of this collection from an archeological standpoint, I am happy to quote the following authorities:

Professor Frank Hamilton Cushing wrote before the collection had been acquired by the Carnegie Museum "This collection is intrinsically valuable, consisting as it does of jade, jadeite, fine terra-cotta, shell, and gold . . . There is no single collection of aboriginal American art works in stone, in any museum here, or, so far as I am informed, abroad, that can compare with this one as to the number of examples it contains of superbly carved, polished, and finished specimens, that are at the same time of the highest artistic beauty, even from our standpoint. So true is this, that I venture to say that no lapidary would undertake to duplicate the stone series alone for less than four times the price that is charged for this entire treasury of ancient American gems. . . .

"But above all the collection is unique among American collections of its kind, thus far gathered, in scientific importance of a very definite sort. It abounds in types illustrating not only the origin of many forms of weapon, symbol, and decoration, but also of the part myth and religious concept play in the modification conventionally, of all these things."

"Were I a man of large means, I would unhesitatingly buy the collection, if only for the sake of having it to study and publish, illustrated, to the world . . ."

Professor Max Uhle wrote: "I examined the Velasco Collection of Costa Rican antiquities with lively pleasure, as I consider it a most important basis for a representative collection of Central American antiquities . . . This collec-

made subsequently, being his fourth collection from Las Guacas, to which was added an extensive collection of pottery, belonging to him, gathered from various localities in the neighborhood of the pueblo of Nicoya, altogether two thousand one hundred and seventy-two specimens.

This transfer having been accomplished and some time having been devoted to a study of the collections from the Pacific Coast in the National Museum in San José, I proceeded to investigate the burial-ground of Las Guacas. It was high time to do some systematic work, if even on only a small scale, at this important place, which had yielded such rich treasures, before the very last corner of the territory had been exhausted. This work was carried on with a force of twelve men for about four weeks until the rains stopped us. The objects obtained during the excavations of Velasco and myself furnish a representative series of the art products in clay, stone, and metal, which are typical of the culture which apparently predominated in the whole region even to the islands of the gulf. The discovery I made of other methods of burial and artefacts of different characters in certain other localities of the peninsula will receive due attention in later papers.

IV. EXCAVATIONS AT LAS GUACAS.

(See Map, Plate XLVII.)

The site of the burial-ground is almost level and was entirely covered with forest-growth when Carillo settled at this place. There were no indications above the ground of the treasures hidden below. The numerous pieces of broken pottery and the metates met with close to the surface proved nothing, as similar accumulations are common enough in these regions near ancient settlements and do not necessarily indicate burials. The entire burial-ground does not seem to include more than a few acres, but is described as varying much in depth, containing, especially in the central part, several burials one above the other. Close to the road leading up to Carillo's house a corner was left, which had never before been touched and here my work was begun.

tion is of extraordinary importance. It comes from a province of Central America most important from a historical point of view. It seems to me, with my knowledge of the richest European and other museums, to be unique in its wonderful implements of stone and according to my modest experience, as far as objects of jade and nephrite are concerned, unequalled by any collection in the world. We shall have to inquire more closely into the relations once existing between the tribes of Central and South America in the near future and it would be difficult to find another collection as appropriate as this on which to base the investigation of the connecting links."

Professor D. G. Brinton wrote: "No other collection of jade and other implements and utensils from Costa Rica equalling Velasco's has been made from that area. It is well located and very typical of the culture of the natives from whose territory it comes. The abundance in it of jade or nephrite objects is remarkable, and renders it unique and valuable for this alone. Probably no equally fine line of specimens from those tribes will again be offered. Both from the ethnographic and artistic point of view, it has exceptional merit."

Excavations, started at the spot selected, showed a surface layer of black humus about half a meter thick, which contained numerous pieces of red and black potsherds. Below the humus a layer of red clay was met. This layer had a thickness of from one to one and a half meters, and in parts contained lumps of humus, and rested upon a bottom layer of yellowish-white conglomerate of rather hard consistency, called by the natives *cascajo*. In this substratum, which was perfectly dry, the Indians had hollowed out pits or cavities, more or less oval or circular, and in these they had placed the bodies of the dead with their vessels, metates, ornaments, etc. The pits had then been refilled with the same material and it was alone through its looser consistency that I was enabled, although with great difficulty, to determine to a certain extent the location and form of graves. The task would have been still more difficult without the previous knowledge of the burial-pits of this region, which I had obtained during my excavations in 1897. I had at that time an opportunity to examine a number of similar graves at Las Casitas, near the pueblo of Nicoya, where the conglomerate formed a high naked hill, not covered by any layer of soil or clay, and had become almost as hard as rock by exposure to the air. This was also the case on a hill at Las Guacas, adjoining the burial ground, where, however, no burial-pits were found.⁸ At Las Casitas the flat top of the hill was in one spot almost honey-combed with pits close to each other. These cavities were in most cases well preserved and their form could be well determined. Figs. 1 and 2 show vertical and horizontal sections of one of the typical pits at Las

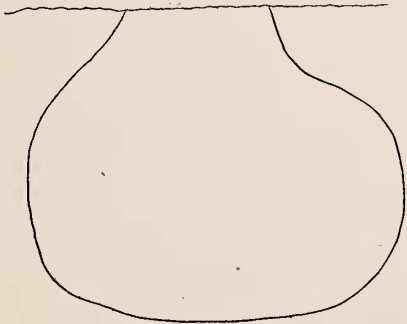


FIG. 1. Vertical Section of grave at Las Casitas.

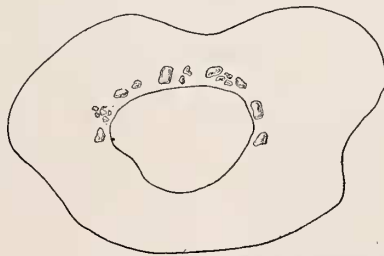


FIG. 2. Horizontal section of grave at Las Casitas, with portion of the circle of stones around the opening.

Casitas. A number of these pits with their contents were examined and records made during my sojourn at Las Casitas, but the latter have not as yet been published. The material is now preserved at Stockholm. As a rule the pits at Las Guacas were smaller and in places closer together. At the eastern end of the field

⁸ In Dr. Sapper's description of the burial-ground, referred to above, no mention is made of the underground pits, but, probably at the time of his visit no traces of the outlines of the pits existed, and closer observations apparently were made impossible by the fact that Dr. Sapper during his comparatively short stay here was hindered in carrying on excavations of his own. Velasco's force was then at work excavating the burial-ground.

excavated at Las Guacas the soil was looser throughout, and here it was impossible to distinguish the outlines of the cavities.

Before starting the work here recorded we first had to dig through a piece of ground on the western side, which had been previously partly excavated in a superficial way. Here we met with a number of broken metates, some potsherds and other fragments. Only after we had struck parts where the soil had not recently been disturbed did our task of recording the finds seriously begin.

The detailed results of the excavations carried out are given in the following pages.

Burial No. I.

(See Map, Plate XLVII.)

At the depth of one and one half meter three semicircular pits were found, arranged triangularly and joining in a common center as shown on the plan. In these pits were deposited close to the bottom the now almost entirely decayed bones of five skeletons. The bones were placed in heaps close to the skulls, showing here, as in every other part of the cemetery, the prevalence of the method of bunched burials. In two cases metates (*b* and *d*) had each been placed immediately above a skull, thus protecting them from the pressure of the soil. The following artefacts were met with in this burial:

a. (*Pl. III, Fig. 3.*) Metate of grayish basaltic lava, plain, nearly rectangular in shape, three-legged, with slightly curved body, which shows signs of considerable wear. Legs cylindrical. Length 45 cm., breadth 33 cm., height at the middle of plate 13 cm., thickness of the plate about 3 cm. Found standing leaning to the right near the south wall, 1.95 m. below the surface.



FIG. 3. Small Figurine.
(Cat. No. $\frac{2793}{2}$.) $\frac{1}{2}$.

b. Rectangular plain metate, almost flat, with three short cylindrical legs. Resembles *a*. Shows signs of wear. Length 42 cm., breadth about 28 cm., height about 5 cm., thickness of plate about 1 cm. Found standing close to the last (*a*) at 2.1 m. below the surface. (Cat. No. $\frac{2793}{2}$.)

c. (*Fig. 3.*) Small human figurine of clay in sitting position. Color reddish yellow. The breasts and arms adorned with designs in black. The head-dress painted red. Sex not marked. The body is hollow, broken. Height 10.5 cm., breadth at the elbows 7 cm. Found lying on the top of metate *b*. Figurines of this type are of rather common occurrence in this burial-ground.

d. (*Pl. IV, Figs. 1, 2, and Pl. V, Fig. 1.*) Unusually large, rectangular metate

of most excellent workmanship, with very high, slender, cylindrical legs, and a thin plate. This specimen is richly ornamented with sculptured designs. On the upper side each end shows a band 5 cm. broad, with a small bird-design in the middle, the head extending from the edge, and guilloche patterns on the sides. The whole lower side of the body is nearly covered with designs, mostly geometrical, consisting of guilloche and meander patterns. A meander band divides its surface into two fields of which the larger is partly filled with a highly conventionalized bird-design, the smaller contains a conventionalized human (?) head on a long neck. The lower ends of the legs are adorned with geometrical designs. Length about 62 cm., breadth about 36 cm., height about 23 cm., thickness of the plate about 1.5 cm. Found standing leaning to the left at a depth of 2 m. below the surface.

Burial II.

This was a small pit, oval in section, about one meter in diameter. Contained at the depth of about 1.5 m. near the north side one bunched burial. Standing almost upright close to this we found:

a. (*Pl. III, Fig. 4.*) Metate of nearly oval shape, slightly concave and with three short, nearly knoblike legs. Length 49 cm., breadth about 30 cm., height 9 cm. Lying on the top of this were found four beads of greenstone:

b. (*Fig. 4.*) Bead of pale green bowenite, flattened cylindrical. Length 2 cm., breadth 1.8 cm., thickness 0.7 cm.

c. Bead of pale green bowenite, flattened cylindrical, resembling b. Measurements the same as of the above. (Cat. No. $\frac{2793}{7}$.)

d. (*Fig. 5.*) Bead of pale green bowenite, cylindrical. Length 2.5 cm., diameter 0.5 cm.

e. Bead of dark green saussurite, cylindrical, resembling d. Length 2.4 cm. Diameter 0.7 cm. (Cat. No. $\frac{2793}{9}$.)



FIG. 4. Bead of pale green bowenite. (Cat. No. $\frac{2793}{6}$.) $\frac{1}{4}$.

Burial III.

Circular pit with a diameter of about one meter. On the north side, and at the depth of 2-2.5 meters, were the remains of two skeletons. No object was found deposited with them, but a few small potsherds were scattered in the soil.



FIG. 5. Bead of pale green bowenite. (Cat. No. $\frac{2793}{8}$.) $\frac{1}{4}$.

Burial IV.

Pit nearly oval. Largest diameter 1.1 m. Contained at the depth of about 2 m. and close to the east side a bunched burial. Here was found a rectangular, three-legged metate, resembling in general shape the specimen given on Pl. VI, Fig. 1. The upper side was plain,

the under side surrounded with a broad band with guilloche designs. The cylindrical legs are adorned with rings in relief near the base. Length 54 cm., breadth at the middle 32 cm., height 9 cm. Broken in two parts. Found standing on the west side of the skeleton about 2.2 m. below the surface. (Cat. No. $\frac{27.9.3}{10}$).

Burial V.

Almost circular pit about 1 cm. in diameter, containing two bunched burials, one at the depth of about 2 m., the other at the depth of 2.4 m. No other object was met.

Burial VI.

Oval pit, greatest length 0.8 m., containing two bunched burials, one at the eastern end at the depth of about 1.8 m., the other at the western end and at the depth of 2.2 m. Here was found a metate (Pl. VII, Fig. 2), plain, with three high, almost square, somewhat curved legs, tapering toward the ends. Length about 44 cm., breadth about 26 cm., height 16 cm. It was discovered between the two skeletons and lying on its side with the legs toward the west.

Burial VII.

Pit, oblong in section. Length about 1 m. It contained at the eastern end one bunched burial at the depth of about 2 m. In this grave there were also found, at the depth of about 1.5 m.

- a. Small piece of slate. Length 5 cm. (Cat. No. $\frac{27.9.3}{12}$.)
- b. Cylindrical leg of a small metate. (Lost.)
- c. Fragments of pottery. (Not preserved.)

Burial VIII.

This consisted of three circular pits combined, forming an oblong figure about 1.75 m. in length and 1 m. in breadth. At the southern end were found two bunched burials at about 2 m. depth, at the northern end one bunched burial at 1.5 m.

a. (Pl. VI, Fig. 1, 2.) Metate, large, rectangular, with high cylindrical legs. On the upper side the borders of each end are adorned with a sculptured band of guilloche designs 8 cm. broad. The under side is enframed by a band 9 cm. broad with similar designs. (See Pl. VII, Fig. 1.) Legs cylindrical, high, with geometrical designs. Length about 60 cm., breadth about 45 cm., height 20 cm. Found standing 2.1 m. below the surface near the northern side of the grave, close to the skeletons.

On the top of this metate there were found two amulets of stone.

b. (Figs. 6, 7, 8.) Amulet of green polished bowenite, made in the shape of a small flat ax, the upper part showing the head and breast of a human figure with crossed arms and head-dress sculptured in low relief, the lower part flat, without

sculptures. At the neck there is a transverse, cylindrical perforation for suspension. This amulet has been damaged by fire, as is shown on the back. Length 8.1 cm., breadth 2.5 cm.

c. (Figs. 9, 10, 11.) Amulet long, rectangular, of grayish polished stone. The upper half shows a human head and breast, with crossed arms. The lower half



FIG. 6. Front view of amulet of green bowenite. (Cat. No. $\frac{2793}{14}$.) $\frac{1}{2}$.



FIG. 7. Back view of amulet. (Cat. No. $\frac{2793}{14}$.) $\frac{1}{2}$.



FIG. 8. Side view of amulet. (Cat. No. $\frac{2793}{14}$.) $\frac{1}{2}$.

is flat, plain. There is a transverse, cylindrical perforation at the neck. Length 13 cm., breadth 3.4 cm.

d. (Pl. VIII, Figs. 1, 2.) Rectangular metate, with three cylindrical legs. Upper side plain, but the entire under side covered with designs. Inside of the frame the whole surface is occupied by the figure of a bird with spread wings and broad tail. The head of the bird is sculptured on the single leg, the feet on the paired legs of



FIG. 9. Front view of grayish stone amulet. (Cat. No. $\frac{2793}{15}$.) $\frac{1}{2}$.



FIG. 10. Back view. (Cat. No. $\frac{2793}{15}$.) $\frac{1}{2}$.



FIG. 11. Side view. (Cat. No. $\frac{2793}{15}$.) $\frac{1}{2}$.

the metate. The decoration at each end consists of a narrow band with two opposing animal heads joined together by a guilloche design, representing the body. The legs of the metate are each encircled with three raised, parallel bands around

the lower ends. Length 55 cm., breadth 37.5 cm., height 14 cm. Found standing 2.2 m. below the surface at the eastern end of the grave.

e. Plain metate with three cylindrical legs. Resembles Pl. I, Fig. 3. Length 42 cm., breadth 27 cm., height 10 cm. Found standing 2.4 m. below the surface, near the southern end and close to the two skeletons.



FIG. 12. Pestle of clay. (Cat. No. $\frac{2793}{183}$.) $\frac{1}{2}$.



FIG. 13. Figurine. (Cat. No. $\frac{2793}{193}$.) $\frac{1}{2}$.

f. (Fig. 12.) Pestle of red clay with an animal head at the top. Length 11.5 cm., diameter at the base 4.5 cm. Found 1.8 m. below the surface close to the burial at the northern end.

Close to this object and at the same depth there was found :

g. (Fig. 13.) A small human figure with large grotesque head, sitting on a small, rectangular, four-legged seat and holding a child on its knees. The figure wears a hat with linear, incised ornamentation. Height of figure 8 cm. The seat is adorned with a protruding animal head at each end. Length 11 cm., height 2.5 cm.

Burial IX.

Pit nearly circular, diameter about 1 m., containing one bunched burial close to the southern wall at the depth of about 1.8 m. Close to the skeleton in the middle of the pit there was found lying on its back :

a. A rectangular metate, plain, with three short, cylindrical legs. Resembles Pl. III, Fig. 3. Length 45 cm., breadth 30 cm., height 8 cm. Left at Las Guacas. Near this metate, on the northern side, we found the following smaller artefacts :

b. (Fig. 14.) Ocarina, or whistle of clay, painted black, with the head of a bat in relief at the base of the mouth-piece. Through impressions with some tool (roulette?) the surface of the back has been covered with a pitted ornamentation.

A plain band around the center divides this peculiar ornamentation into two zones. Air-holes four. Length 9 cm., diameter 5.5 cm.

c. (Figs. 15, 16, 17.) Amulet in the shape of a thin, flat celt of polished gray serpentine. Upper half of the front adorned with a conventionalized human head with a large parted tongue (?) extending from below the mouth. The ridge on the



FIG. 14. Clay whistle. (Cat. No. $\frac{2793}{21}$.) $\frac{1}{2}$.



FIG. 15. Front view of amulet.
(Cat. No. $\frac{2793}{22}$.) $\frac{1}{2}$.



FIG. 16. Back view of amulet.
(Cat. No. $\frac{2793}{22}$.) $\frac{1}{2}$.



FIG. 17. Side view of amulet.
(Cat. No. $\frac{2793}{22}$.) $\frac{1}{2}$.

back, left when removing this piece from the core, is plainly seen. Length 9.5 cm., diameter about 4 cm.

d. Oblong polishing stone of translucent agate. Length 3.5 cm., breadth 2.9 cm. Found close to the last object. (Cat. No. $\frac{2793}{23}$.)

Burial X.

Large oblong pit about 1.5 m. in breadth. Filled with a layer of bones almost half a meter thick, principally consisting of long bones of numerous individuals, but only a few skulls, all in fragmentary condition. No object was deposited with these remains.

Burial XI.

Nearly circular pit, about one meter in diameter, containing in the center one bunched burial at the depth of two meters. On the top of this was placed in standing position :

a. (Pl. IX, Figs. 1-4.) Metate of rare shape, of fine grained basaltic lava. Legs triangular, flattened, with slit perforations. Specimen highly adorned with sculptured designs in low relief on both the upper and lower sides of the plate, on the edges, and the legs. On the upper side only the borders at each end are adorned. The broader decoration at the front end shows a rectangular field 10 cm. broad, with two highly conventionalized human figures opposite each other. The bodies have entirely disappeared and the two large rectangular heads are connected by only a slender link. The arms are extended, each figure having one at alternate corners, transformed into a meander. The two protruding knobs at the front corners, transformed into a meander. The two protruding knobs at the front corners form part of a design belonging to the under side. The sculptured band, about 2 cm. broad, at the back of the upper side, shows a simple, purely linear design. The edges are adorned with a continued scroll design. The three legs are sculptured all over. Every attempt to decipher these conventionalized designs, embodied in the legs, proved futile as long as I examined the object in its natural standing position. But when I turned it on its back the conception of the sculptor



FIG. 18. Oblong celt.
(Cat. No. $\frac{2733}{23}$.) $\frac{1}{4}$.

was soon revealed. Before I had thus discovered the meaning of the design, the purpose of the small circular holes of these legs was most puzzling. The large, oblong slits had undoubtedly served for securing the metate to the wall or some object in order to keep it steady during the grinding process. Besides there were at the front two special loops which might have served a similar purpose. The smaller, circular holes appeared consequently totally superfluous. While trying to designate some possible utilitarian reason for these holes, the anthropomorphic design revealed itself, and I now realized that the holes had been bored merely to indicate the openings between the arms and the body and below the knees of the human or simian figures which the legs represent.⁹ (See Pl. IX, Fig. 4.)

Both loops, too, at the front of the specimen here described, as seen from the lower side, apparently represent a human or simian figure with the united arms bent toward the chin or mouth. In

⁹Compare also Pl. XV, Figs. 1-4, Pl. XVI, Figs. 1-4, and Pl. XVII, Figs. 1, 2, showing metates of the same peculiar type and from the same locality, all belonging to the Velasco collections. Pl. IX, Fig. 4, shows most plainly the whole simian figure in a sitting position, with both arms bent upward toward the mouth, the tail kept parallel with the back and joined to the neck. In Pl. XVII, Figs. 1, 2, the human traits are lost, and only through comparison and observation of forms like those above described can any understanding of the original conception of the sculptor be attained.

the ceramic art from the highlands this representation in more or less realistic form is of rather common occurrence. Compare Pl. 43, Fig. 9, Pl. 40, Fig. 2, and many others in my previous work, "Archæological Researches in Costa Rica." It is usually, if not in all cases, the representation of a flute-blowing individual. About the highly conventionalized design which adorns the surface of the under side, I am unable to venture any explanation, on account of the lack of material for comparison. This highly artistic metate plainly shows signs of wear. Length 38 cm., breadth 20 cm., height 14 cm., thickness of plate 2.5 cm.

b. (Fig. 18.) Oblong celt of blackish-green stone, highly polished, except at the upper end, which has been hafted. Section oval. Edge curved. Length 7.1 cm., breadth 3.9 cm. Found about 1 m. below the surface near the eastern side.

Burial XII.

Pit oblong in section. Length about 1 meter. Contained one bunched burial close to the northern wall at the depth of about 1.5 m. Near the western wall at the same depth were found :

a. Large metate having a flat surface and three square legs with corners rounded. It resembles Pl. III, Fig. 3. Broken. Length 52 cm., breadth 36 cm., height 12 cm.



FIG. 19. Polishing stone of agate. (Cat. No. $\frac{2793}{27}$.) $\frac{1}{4}$.



FIG. 20. Small Pot. (Cat. No. $\frac{2793}{28}$.) $\frac{1}{2}$.



FIG. 21. Polishing stone. (Cat. No. $\frac{2793}{29}$.) $\frac{1}{4}$.



FIG. 22. Polishing stone. (Cat. No. $\frac{2793}{30}$.) $\frac{1}{4}$.

b. (Fig. 19.) Oblong polishing stone of agate. Length 3.5 cm., breadth 2.3 cm. Found close to the last object.

Burial XIII.

Pit oblong in section. Length 1.15 m. Containing one bunched burial close to the western wall and in one spot near the eastern end at the depth of about 1 m. were found :

a. (Fig. 20.) Small globular pot with narrow mouth and low rim. Color red. Height 5.5 cm., diameter 6 cm.

b. (Fig. 21.) Oblong polishing stone of agate. Length 3.8 cm., breadth 2.7 cm. Found close to the last object.

c. (Fig. 22.) Small polishing stone of agate, translucent. Length 2.5 cm., breadth 1.6 cm. Found together with the last.

d. (Figs. 23, 24.) Small narrow and thin celt-shaped amulet of serpentine, with



FIG. 23. Front view of serpentine amulet.



FIG. 24. Side view of serpentine amulet.

(Cat. No. $\frac{2793}{31}$.) $\frac{1}{2}$.

a round hole for suspension. Color mottled greenish. Length 7 cm., breadth 1.7 cm., thickness 0.5 cm. Found together with the polishing stones.

Burial XIV.

Pit oblong in section. Length 1.25 m. In the center one bunched burial at the depth of about 1.2 m., but with no other objects.

Burial XV.

Oblong grave consisting of two pits joined. Combined length 2 m. At the eastern end we found one bunched burial at the depth of about 1.35 m., and close



FIG. 25. Bead. (Cat. No. $\frac{2793}{32}$.) $\frac{1}{2}$.



FIG. 26. Gypsum bead. (Cat. No. $\frac{2793}{33}$.) $\frac{1}{2}$.



FIG. 27. Saussurite bead. (Cat. No. $\frac{2793}{36}$.) $\frac{1}{2}$.

to the northern wall three others in one heap at the depth of about 2.3 m. Close to these we found five large oblong beads lying close together.

a. (Fig. 25.) Oblong massive bead of opaque white impure gypsum. Perforation cylindrical. Length 8 cm., diameter 3.5 cm.

b. (Fig. 26.) Tubular bead of opaque white gypsum tapering towards the ends. Length 11 cm., diameter 2.5 cm.

c. Oblong massive bead of white gypsum. Length 5.5 cm., diameter 2 cm. (Cat. No. $\frac{2793}{34}$.)

d. Oblong massive bead of white gypsum resembling *a* in shape. Length 5 cm., diameter 2 cm. (Cat. No. $\frac{2793}{35}$.)

e. (Fig. 27.) Oblong massive bead of dark green saussurite. Length 6 cm., diameter 3 cm.

In the southeastern part of the grave, at a depth of about 1.5 m., we found :

f. (Fig. 28.) Diminutive depressed globular narrow-mouthed pot, representing a bird. The eyes, beak, wings, and tail in relief. Ornamented with a simple angular incised band on both sides above the wings. Of yellowish color, partly blackened by burning. Height 4.6 cm., diameter 5.6 cm.

Burial XVI.

Oval pit about 1 m. in length. Contained at the eastern end one bunched burial, at a depth of about 1.9 m. At the western end, 1.8 m. below the surface, were found :

a. (Pl. III, Fig. 5.) Metate of nearly oval form, concave, and with three short knob-like legs. Color reddish. Length 40 cm., breadth 27 cm., height 10 cm. On the top of the metate were placed five small objects of green stone, namely :



FIG. 28. Miniature pot.
(Cat. $\frac{2793}{37}$.) $\frac{1}{2}$.



FIG. 29. Head of bird.
(Cat. No. $\frac{2793}{39}$.) $\frac{1}{4}$.



FIG. 30. Head of bird.
(Cat. No. $\frac{2793}{40}$.) $\frac{1}{4}$.

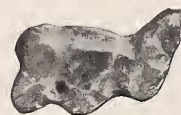


FIG. 31. Animal figure.
(Cat. No. $\frac{2793}{41}$.) $\frac{1}{4}$.

b. (Fig. 29.) Bird-head of green bowenite, with long slender beak. Length of the object 2.5 cm.

c. (Fig. 30.) Bird-head of dark green bowenite. Length 3 cm.

d. (Fig. 31.) Small animal figure of mottled green saussurite with erect tail. Length 2.2 cm.

e. Cylindrical bead of green bowenite. Length 2.2 cm., diameter 1 cm. Resembles Fig. 5. (Cat. No. $\frac{2793}{42}$.)

f. Cylindrical bead of green bowenite. Length 2.4 cm., diameter 0.8 cm. Resembles Fig. 5. (Cat. No. $\frac{2793}{43}$.)

The objects, which were found in the adjoining pits, the forms of which could not be ascertained, are located on the map, Pl. XLVII, and described below.



FIG. 32. Animal figure.
(Cat. No. $\frac{2793}{47}$.) $\frac{1}{4}$.



FIG. 33. Small pot.
(Cat. No. $\frac{2793}{15}$.) $\frac{1}{2}$.



FIG. 34. Small pot.
(Cat. No. $\frac{2793}{46}$.) $\frac{1}{2}$.

1. (Fig. 32.) Amulet of green saussurite in the shape of animal with tail erect. The animal is probably the ant-bear, which often is represented in the art of this region. The characteristic habit of this animal, which often walks with the tail standing nearly erect, has been emphasized by the artist. It may represent a skunk, or possibly a squirrel. Length 4.3 cm. Found at the depth of 1.2 m.

2. (Fig. 33.) Pot with nearly quadrangular contour as seen from above, rim curved, shoulder adorned with two concentric rows of incised dentations. Color red. Height 8.8 cm. Diameter 11 cm. Diameter of the mouth 6 cm. Found 1.5 m. below the surface.

3. (Fig. 34.) Small, nearly globular pot with narrow mouth. Color yellowish. Height 5.5 cm. Diameter 5.5 cm. Found at the depth of 1.6 m.

4. (Pl. III, Fig. 2.) Miniature metate, child's implement, rectangular, with three conical legs. Length 18 cm., breadth 14 cm., height 8.5 cm. Found on its side with legs toward the west.

5. "Curriol," a red mineral substance used for coloring pottery. Found immediately below the above metate.

6. (Pl. III, Fig. 1.) Small metate, child's implement, slightly curved plate, legs cylindrical. Length 28.5 cm., breadth 22.5 cm., height 10 cm. Found lying on its back 2.1 m. below the surface.

7. Metate resembling the last in shape and size. Length 18.5 cm., breadth 17.5 cm., height 7 cm. Found in the same position as the last and close to it. (Cat. No. $\frac{2793}{49}$.)

8. Globular pot with curved rim, at the base of which there is a pitted band decoration 0.5 cm. broad. Color red. Height 10.5 cm. Diameter 12 cm. Found standing on the last metate. (Cat. No. $\frac{2793}{50}$.)

9. (Fig. 35.) Ceremonial mace-head, perforated, of white polished gypsum, in the shape of what is probably the head of a bird. The pouch-like appendix below



FIG. 35. Ceremonial mace-head. (Cat. No. $\frac{2793}{51}$.) $\frac{1}{2}$.



FIG. 36. Bead carved from cuttle-fish bone. (Cat. No. $\frac{2793}{52}$.) $\frac{2}{1}$.



FIG. 37. (Cat. No. $\frac{2793}{54}$.) $\frac{1}{2}$.

the throat may represent the wattled throat of the turkey. Length 11.3 cm., height 7.3 cm. Found close to the metates 1.9 m. below the surface.

10. (Fig. 36.) Small bead, round, carved from the bone of a cuttle-fish. Diameter 1.3 cm. Found close to the mace-head.

11. Bead similar to the above. Diameter 1.3 cm. Found close to the former. (Cat. No. $\frac{2793}{53}$.)

12. (Fig. 37.) Amulet consisting of a fine-grained, grayish celt, parted length-



FIG. 38. Ocarina. (Cat. No. $\frac{2793}{55}$.) $\frac{1}{2}$.



FIG. 39. Whistle. (Cat. No. $\frac{2793}{56}$.) $\frac{1}{2}$.

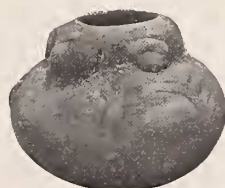


FIG. 40. Small Pot. (Cat. No. $\frac{2793}{57}$.) $\frac{1}{2}$.



FIG. 41. Small Pot. (Cat. No. $\frac{2793}{59}$.) $\frac{1}{2}$.

wise and polished. Transverse perforation for suspension near the upper end. Length 10.5 cm., breadth at the lower end 4.8 cm.

13. (Fig. 38.) Small ocarina in the shape of an armadillo. Mouth-piece lost. Length 5.8 cm. Color red. Found 1.2 m. below the surface.

14. (Fig. 39.) Red clay whistle having the shape of a bird with broad flat beak, and spreading wings and tail. Height 6.7 cm., breadth 6.8 cm. Found at the depth of 1.35 m.

15. (Fig. 40.) Diminutive depressed globular pot, having the shape of a bird. Color yellow. Height 4.5 cm., diameter 6 cm. Found at the depth of 2.25 m.

16. Diminutive pot resembling the last. Height 4.6 cm., diameter 5.4 cm. Broken. Found close to the last. (Cat. No. $\frac{2793}{583}$.)

17. (Fig. 41.) Diminutive pot, depressed globular, with small orifice. Rim straight. Color red. Height 6.2 cm., diameter, 7.3 cm. Broken.



FIG. 42. Amulet.
(Cat. No. $\frac{2793}{603}$.) $\frac{1}{2}$.



FIG. 43. Amulet.
(Cat. No. $\frac{2793}{611}$.) $\frac{1}{2}$.

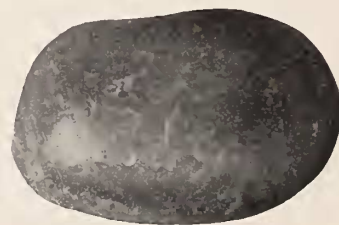


FIG. 44. Polishing stone.
(Cat. No. $\frac{2793}{622}$.) $\frac{1}{4}$.

18. (Fig. 42.) Amulet of serpentine, oblong, thin, and flattened, representing a conventionalized human figure with head-dress, the lower half of the face sharply triangular. There are parallel incisions on each side of the abdomen to indicate the fingers. There are two circular holes at the upper end for suspension. Length 11.9 cm., breadth 3.3 cm.

19. (Fig. 43.) Ax-shaped amulet of polished green bowenite, rectangular. The upper half is gently convex, showing the head and wings of a bird (owl?) adorned with head ornaments composed of two opposing animal heads. The lower half below the wings is cut down to half the thickness of the upper half, and left plain. Length 11 cm., breadth 4 cm.

20. (Fig. 44.) Polishing stone, agate pebble, oblong. Length 4.2 cm., breadth 2.6 cm. Found at the depth of 1 m.

21. (Fig. 45.) Polishing stone, oblong pebble of opaque white agate. Length 3.3 cm., breadth 2 cm. Found close to the two former objects.

22. Polishing stone, agate pebble, translucent, oblong. Length 3.2 cm., breadth 1.6 cm. Found close to the last mentioned specimen. (Cat. No. $\frac{2793}{64}$.)

23. (Fig. 46.) Plain amulet of serpentine, nearly tongue-shaped, flat, thin, perforated with two round holes for suspension. Length 10.5 cm., breadth 3.8 cm. Found at the depth of 1.8 m.



FIG. 45. Polishing stone.
(Cat. No. $\frac{2793}{63}$. $\frac{1}{1}$.)



FIG. 46. Amulet.
(Cat. No. $\frac{2793}{63}$.) $\frac{1}{2}$.



FIG. 47. Amulet.
(Cat. No. $\frac{2793}{66}$.) $\frac{1}{2}$.

24. (Fig. 47.) Celt-shaped amulet of dark green bowenite, representing a human figure with head-dress, the arms crossed on the breast. The eyes are represented by the two circular holes, which also serve for suspension. The nose is represented by a groove. The back is ground flat, showing no sign of the central ridge. Length 9 cm., breadth 2.3 cm. Found close to the above.

25. (Fig. 48.) Cylindrical bead of gray stone. Length 1.3 cm. Found 1.25 m. below surface.



FIG. 48. Bead.
(Cat. No. $\frac{2793}{67}$.) $\frac{1}{1}$.

26. Celt of gray stone, small, polished, oval in section, edge curved somewhat obliquely. Resembles Pl. XXIII, Fig. 2. Length 7.3 cm. breadth 4 cm. Found at the depth of 1.2 m. (Cat. No. $\frac{2793}{68}$.)

27. Celt-shaped amulet of quartz with nearly parallel sides, the surface polish worn off. Length 8.5 cm., breadth about 2.5 cm. Found at the depth of 2 m. (Cat. No. $\frac{2793}{69}$.)



FIG. 49.
Amulet. (Cat.
No. $\frac{2793}{70}$.) $\frac{1}{2}$.

28. (Fig. 49.) Celt-shaped amulet of light-green bowenite, with a conventionalized head sculptured at the top. The nose, or beak, triangular. Length, 8.5 cm., breadth 2.3 cm. Found 2.25 m. below the surface.

29. Diminutive, depressed globular pot, with small orifice. Resembles Fig. 41. Color red. Height 4 cm. Diameter 6 cm. Found at the depth of 2 m. (Cat. No. $\frac{2793}{71}$.)

30. (Fig. 50.) Celt of greenstone, oblong, flattened, polished, oval in section, edge curved. Length 9.5 cm., breadth 3.8 cm. Found at the depth of 0.9 m.

31. Celt of blackish greenstone, oblong, flattened, polished, oval in section, edge slightly curved. Length 7.2 cm., breadth 3.7 cm. Resembles Fig. 37. Found at depth of 0.9 m. (Cat. No. $\frac{2793}{73}$.)

32. (Fig. 51.) Celt-shaped amulet of quartz, representing a conventionalized



FIG. 50. Celt. (Cat. No. $\frac{2793}{72}$.) $\frac{1}{4}$.

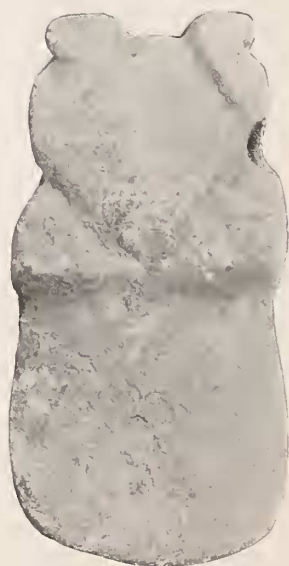


FIG. 51. Celt-like amulet. (Cat. No. $\frac{2793}{74}$.) $\frac{1}{4}$.

bird, eyes not marked. Lower half flat, thin. Length 6.7 cm., breadth 3.4 cm. Found close to the last.

33. (Fig. 52.) Celt-shaped amulet of whitish quartz, representing human figure. Head in this specimen narrower than the body. Length 6.4 cm., breadth 2 cm. Found close to the last.

34. Celt-shaped amulet of blackish-green, highly polished jade. Length 10.7 cm., breadth 4 cm. Resembles Pl. I, Fig. 18. Found 2.1 m. below the surface. (Cat. No. $\frac{2793}{76}$.)

35. (Fig. 53.) Bark-scraper of greenstone, oval, flat. This is an instrument used for preparing bark for clothing and other purposes. The margin shows a groove running all round the object and serving for the fastening of the handle.

The side, which was used for the scraping process, is provided with seven parallel straight grooves, each ridge of which is also provided with another shallow groove.



FIG. 52. Celt-like amulet. (Cat. No. $\frac{2793}{75}$.) $\frac{1}{2}$.



FIG. 53. Bark-scraper. (Cat. No. $\frac{2793}{75}$.) $\frac{1}{2}$.

The opposite side, used for smoothing, is flat. Length 7.3 cm., breadth 6 cm., thickness 2.8 cm. Found 1.35 m. below the surface.

This form has, as far as I have been able to ascertain, never been found on the Atlantic coast of Costa Rica, or in the highlands, but only in Nicoya. Similar bark-scrapers, but of nearly rectangular shape, I found in the year 1898 in various places on the Pacific coast of Salvador, in the present territory of the Pipiles. In Guatemala, in the city of Escuintla on the Pacific slope, I observed an ancient tool of the same general shape as the Costa Rican barkscraper, but entirely flat and smooth on both sides. It was of large size, probably weighing about two kilograms. It had been found years ago while making excavations for the foundations of a house. It was now used by the owner of a small hotel (Anderson's) for keeping the door open. The owner refused to part with it.



FIG. 54. Amulet.
(Cat. No. $\frac{2793}{75}$.) $\frac{1}{2}$.

36. (Fig. 54.) Amulet, large parted celt of grayish stone, polished, and adorned with the representation of two very roughly sculptured, conventionalized human faces and arms. The nose in the upper face is indicated in a crude way by a vertical band with transverse, parallel, incised lines. The upper end is broken off. Length 13.2 cm., breadth 6 cm. Found 2.4 m. below the surface.

37. (Fig. 55.) Celt, large, symmetrical, smoothly polished, of mottled gray

greenstone, oval in section, edge curved. Length 13.2 cm., breadth 5.8 cm. Found at the depth of 0.9 m.

38. (Fig. 56.) Ceremonial club of white quartz in the shape of an owl's head with large orbits and ear-tufts. The nostrils are well indicated, but the eyes were omitted by the sculptor. Length 12 cm., breadth 8 cm. Found 2 m. below the surface.

After the work of excavating had been well started and the first burials laid bare for my own work with the trowel and tape-line, some of the men were put to work on an adjoining part of the burial-ground. The limited time and the difficulties caused by heavy rains only allowed me to record the finds from the small

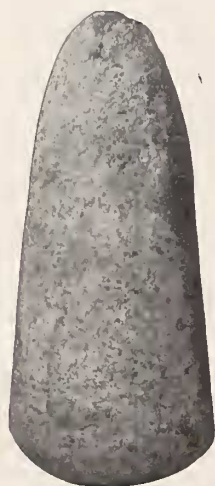


FIG. 55. Celt. (Cat. No. $\frac{2793}{50}$.) $\frac{1}{2}$.



FIG. 56. Head of ceremonial club. (Cat. No. $\frac{2793}{50}$.) $\frac{1}{2}$.

portion of the burial-ground described above. Only partial attention could be paid to the excavations in the adjoining part. All the burials, however, here appeared to be of the same general character, but the burial-ground at this part being deeper, the fragments of the skeletons appeared in two layers of pits. In one spot not less than fourteen metates, turned upside down and most of them broken, were found almost in one heap in the greatest disorder and covering the fragments of several skeletons. The stone beads met with were only found singly or two to three together with a skeleton.

During my first visit to Las Guacas I had observed amongst the heaps of broken metates at the burial-ground several large flat blocks of sandstone, which were partly hollowed out, and on which celts probably had been polished. At my return, however, these stones had all disappeared. A number of the most characteristic objects unearched on the above mentioned part of the burial-ground are described and figured below.

I. OBJECTS OF STONE.

1. (Pl. X, Figs. 1, 2.) Unusually large metate, with the upper side plain, the lower side covered with the sculptured design of a large bird (or vampire?) with outstretched wings and very small head with protruding eyes. The bird design is at each end limited by a broad band with meander designs. The high cylindrical legs are wholly covered with alternating annular and fluted ornamentation. Length 68 cm., breadth 27 cm., height 41 cm. (Cat. No. $\frac{2793}{81}$.)

2. (Pl. I, Fig. 10.) Large battle-ax of slate, double-bladed, sharp-edged. Length 22 cm., breadth of constricted part 6.3 cm. (Cat. No. $\frac{2793}{82}$.)

3. (Pl. I, Fig. 2.) Celt-shaped amulet of gray serpentine. The front side is convex. The upper half is occupied by a human head with large chin and adorned with a head-dress. The eyes are formed by small oblong grooves at each edge, the nose is rectangular, the mouth is adorned with a large plate-like lip-ornament extending to the apex of the chin. The arms or hands are indicated in a rudimentary way by a horizontal groove on each side of the abdomen. The lower half is plain. The central ridge on the back is retained. Transverse hole for suspension at the height of the mouth. Length 11.8 cm., breadth 4.8 cm. (Cat. No. $\frac{2793}{83}$.)

4. (Pl. I, Fig. 1.) Celt-shaped amulet of blackish-gray stone, highly polished. Upper side convex, showing a human head with head-dress, and the arms meeting on the abdomen. Below the mouth there is a triangular extension representing the tongue or a lip-ornament. The central ridge on the back is retained. Length 10.2 cm., breadth 4.8 cm. (Cat. No. $\frac{2793}{84}$.)

5. (Pl. I, Fig. 8.) Celt-shaped, flat amulet of light-green bowenite. The upper half shows a human face, crudely executed, represented by an incised rectangular frame inclosing two round pits, the eyes, which are united by a transverse groove. There is also a head-band with criss-cross design. The arms placed over the abdomen are indicated by two parallel incised lines. The central ridge has been removed through rubbing. Length 11.7 cm., breadth 5.4 cm. (Cat. No. $\frac{2793}{85}$.)

6. (Pl. I, Fig. 7.) Celt-shaped, rectangular, narrow amulet of mottled green serpentine. At the upper end there is a representation of a highly conventionalized human face, only the head-band and the nose, or chin, being indicated. Below the face there are two small round holes pierced for suspension. Back smooth and flat. Length 7.8 cm., breadth 1.6 cm. (Cat. No. $\frac{2793}{86}$.)

7. (Pl. I, Fig. 5.) Celt-shaped, nearly rectangular, narrow amulet of polished pale-green bowenite. At the upper end below the circular suspension hole there is a transverse groove, and below this two parallel, incised lines. Back smooth and flat. Length 5.7 cm., breadth 1.8 cm. (Cat. No. $\frac{2793}{87}$.)

8. (Pl. I, Fig. 9.) Small celt-shaped amulet of gray stone (serpentine?), with two incised parallel lines at the upper end and a round horizontal hole for suspension at the upper end. Central ridge on back retained. Length 4.1 cm., breadth 2.6 cm. (Cat. No. $\frac{2793}{88}$.)

9. (Pl. I, Fig. 20.) Celt-shaped, rectangular, long and narrow, plain amulet of polished gray stone. Pierced from the front with two round holes for suspension. The back smooth and flat. Length 15.3 cm., breadth 2.9 cm. (Cat. No. $\frac{2793}{89}$.)

10. (Pl. I, Fig. 18.) Celt-shaped amulet of gray serpentine, apparently representing the upper convex portion cut off from one of the typical celts of the burial-ground. The artist, after having abandoned an attempt to make a transverse perforation at the upper end, which apparently proved too thin, provided this amulet with two holes pierced in one of the longer sides. This amulet was consequently carried in a horizontal position. Length 14.7 cm., breadth 5.7 cm. (Cat. No. $\frac{2793}{90}$.)

11. (Pl. I, Fig. 19.) Celt-shaped narrow amulet of yellowish gray, impure gypsum without any ornamentation. Suspension hole transverse. Central ridge on back retained. Length 7.2 cm., breadth 2.2 cm. (Cat. No. $\frac{2793}{91}$.)

12. (Pl. I, Fig. 17.) Nearly triangular amulet, consisting of one of the lower quarters of a celt of saussurite, which has been divided both vertically and horizontally, and afterwards sculptured with the figure of a parrot seen in profile. The pierced eye also serves for suspension. This figure is carved on both sides, but the more perfect representation is on the left side. Length 5 cm., breadth 2.3 cm. (Cat. No. $\frac{2793}{92}$.)

13. (Pl. I, Fig. 15.) Axe-shaped amulet of white quartz. The upper part shows the head of a bird with crest and wings. The lower half of the blade is thin. Back convex. Length 5.5 cm., breadth 2.3 cm. (Cat. No. $\frac{2793}{93}$.)

14. (Pl. I, Fig. 16.) Amulet of white quartz in the shape of a highly conventionalized parrot (?) in profile. Suspension hole through the neck. This figure is apparently formed of a celt cut in two vertically. Length 5.4 cm., breadth 2.6 cm. (Cat. No. $\frac{2793}{94}$.)

15. (Pl. I, Fig. 6.) Amulet of gray stone in the shape of a parrot in sitting position, with a celt-shaped appendix to the lower portion of the body. Length 7.5 cm., breadth 3.1 cm. (Cat. No. $\frac{2793}{95}$.)

16. (Pl. I, Fig. 14.) Amulet of quartz carved from a small celt, in the shape of a human figure with the legs divided by a groove, hands held against the breast. Suspension hole through the neck. Material white and translucent. Length 4.4 cm., breadth 2.3 cm. (Cat. No. $\frac{2793}{96}$.)

17. (Pl. I, Fig. 11.) Small amulet of saussurite in the shape of a rudimentary human head (?). Breadth 1.8 cm., height 3 cm. (Cat. No. $\frac{2793}{97}$.)

18. (Pl. I, Fig. 4.) Small amulet of saussurite in the shape of the head of a bird with long, narrow beak, the suspension hole serving as an eye. Height 3 cm., (Cat. No. $\frac{2793}{98}$.)

19. (Pl. I, Fig. 3.) Small amulet of saussurite in the shape of a parrot's head. Height 2.4 cm. (Cat. No. $\frac{2793}{99}$.)

20. (Pl. I, Figs. 12, 13.) Round, flat bead of pale green bowenite. Diameter 1.5 cm. (Cat. No. $\frac{2793}{100}$.)

Several polished celts were also found. One typical specimen is inserted on Pl. XXIII, Fig. 7. Length 10.8 cm., breadth 7.8 cm. (Cat. No. $\frac{2793}{331}$.)

II. OBJECTS OF CLAY.

1. (Pl. II, Fig. 1.) Unusually large vase, nearly cylindrical, but widening toward both ends. Resembles in shape a native drum, and may have served as one; encircled round the middle with three parallel, elevated, notched bands. Height 44 cm., diameter 23 cm. (Cat. No. $\frac{2793}{101}$.)

2. (Pl. II, Fig. 4.) Pot, nearly globular, with low rim, two handles. Color red. Height 9.9 cm., breadth 14 cm. (Cat. No. $\frac{2793}{102}$.)

3. (Pl. II, Fig. 7.) Pot, nearly globular, tripod with narrow rim. The body is nearly covered with vertical parallel incised lines. Color red. Height 9 cm. breadth 11.7 cm. (Cat. No. $\frac{2793}{103}$.)

4. (Pl. II, Fig. 3.) Cylindrical vase, legs and the upper part missing; bottom semiglobular. The body is encircled by two elevated notched bands. Color red. Diameter 10 cm. (Cat. No. $\frac{2793}{104}$.)



FIG. 57. Small pot. (Cat. No. $\frac{2793}{105}$.) $\frac{1}{2}$.



FIG. 58. Small pot. (Cat. No. $\frac{2793}{106}$.) $\frac{1}{2}$.

5. (Fig. 57.) Pot, small, semiglobular, with wide mouth and two band-like handles extending from the rim to the shoulder. Below the base of the rim there is a band with incised triangular designs. Color black. Height 4.4 cm., diameter 6.3 cm.

6. (Fig. 58.) Diminutive pot, depressed globular, with the shoulder encircled by three parallel incised lines. Rim straight, broad, decorated with the head of a

bird in relief on one side. On the opposite side there is a small handle extended to the shoulder. Color yellowish. Height 4.8 cm., diameter 4.5 cm.

7. (Pl. II, Fig. 6.) Diminutive depressed globular pot with a notched fillet encircling the shoulder. A circular hole shows where probably a little head had been inserted. Color red. Height 3.8 cm., diameter 4.6 cm. (Cat. No. $\frac{2793}{107}$.)

8. (Fig. 59.) Leg of clay vessel ornamented by small two-legged upright figure



FIG. 59. Leg of earthen vessel. (Cat. No. $\frac{2793}{108}$.) $\frac{1}{2}$.



FIG. 60. Leg of earthen vessel. (Cat. No. $\frac{2793}{109}$.) $\frac{1}{2}$.

with the head of a parrot. The color was originally white with black and red ornaments, but the specimen is badly worn. Height 8 cm.

9. (Fig. 60.) Leg of clay vessel in the shape of a human figure adorned with a necklace. Color yellowish. Breadth over the shoulders 5.4 cm.

10. (Pl. II, Fig. 5.) Object of unknown use, resembling in general shape a pipe. The part taking the place of the stem is, however, not hollow. The inside of the bowl is blackened with soot. The walls are about 0.4 cm. thick. The outside, which is painted red, is covered with a wavy band decoration, now much obliterated. Length 8.3 cm. (Cat. No. $\frac{2793}{110}$.)

11. (Figs. 61, 62.) Ocarina of rare shape, in the form of a ring. The mouth-piece has the shape of an animal head, showing a row of teeth. On the opposite side two small wings (?) protrude, and between these the instrument is adorned with a small human figure in the round (head broken off). Almost the whole body of the instrument is covered with incised geometrical designs, the band ornamentation being partly pitted in the same manner as the ocarina previously described. (See Fig. 14.) Color black. Length 12.9 cm., breadth 9.2 cm.

12. (Pl. II, Fig. 2.) Ocarina with globular body pitted like those previously described, the incisions partly inlaid with white paint. Length 6.7 cm., diameter 4.1 cm. (Cat. No. $\frac{2793}{83}$.)

On a high hill about twenty minutes distance from the burial-ground Carillo showed me on my first visit an ancient stone enclosure, which must have served as a courtyard. This enclosure was nearly rectangular in shape, about twenty-three meters long and eleven meters broad. The low walls were about half a meter broad and made up of rough water-worn boulders and stones. The general direction of the enclosure was E. 20° N. by W. 20° S.

An object here found was a fragment of stone with a sculptured eye (Pl. XXXII, Fig. 6), undoubtedly from one of the hollow animal heads of a metate, similar to those illustrated on Pl. XVIII, Fig. 4.

Quite close to the burial-ground near Carillo's house there were also some low but very irregular artificial heaps of stone. They were covered with thorny thick-

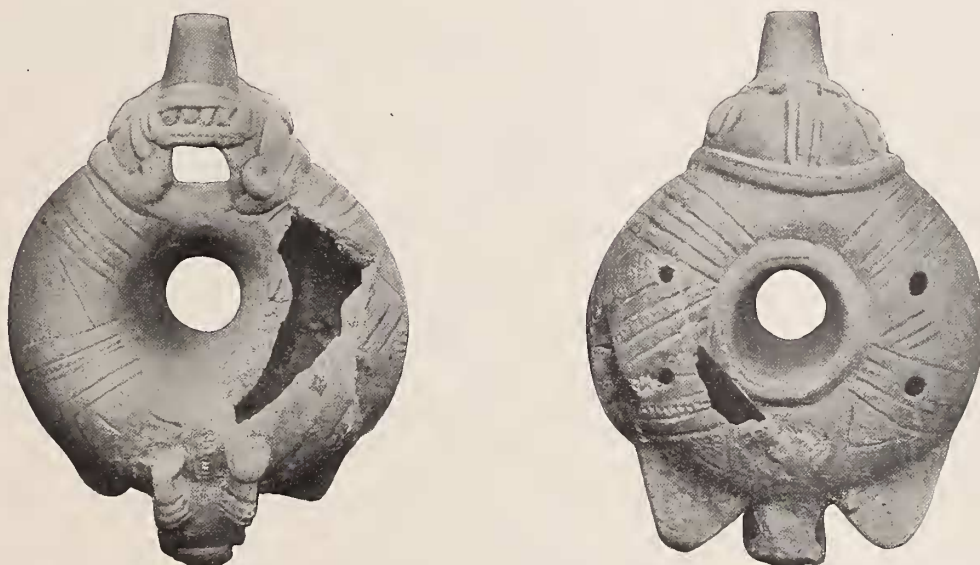


FIG. 61. Ocarina. Top view. (Cat. No. $\frac{2793}{111}$). $\frac{1}{2}$. FIG. 62. Ocarina. Bottom view. (Cat. No. $\frac{2793}{111}$.) $\frac{1}{2}$.

ets. I tried to excavate what appeared to be a couple of small rooms, but the ground, which consisted of hard clay, contained nothing, and had apparently never been disturbed. Fragments of pottery were scarce at both of these structures.

Another ancient structure in the neighborhood of the burial-ground is a road about two meters broad and half a meter deep, cut in the clayey ground and running northward over the high sierras. I crossed stretches of this road, which in parts is well defined, about two miles north of the burial-ground, and it can be traced to one of the mountain peaks of the neighborhood, where the ancients probably had their settlements of perishable wooden huts. On the slopes and especially in the gullies of this mountain I found numerous pieces of large, crude pottery, plainly household vessels. According to Carillo and others the road of the ancients

can be followed for several miles northward. It was the first and only structure of the kind I met with in Central America.

In his work on Nicaragua, Vol. II, p. 334, Squier mentions what appear to be similar roads. He writes: "Amongst the most remarkable remains are traces of immense works in the district of Chontales, near the Indian town of Yuygalpa, on the northern shore of Lake Nicaragua, nearly opposite the city of Granada. They were observed by Dr. Livingston in his visit to the gold-mines of that region; and are described by him as consisting of trenches three or four yards broad at the bottom, and extending indefinitely, in a right line, across the savannas, and into the depth of the forest. He followed one for upwards of a mile."

II. ANTIQUITIES OF THE VELASCO COLLECTIONS FROM LAS GUACAS.

A. OBJECTS OF STONE.

1. *Tools and Weapons.*

(a) *Metates.*

On my first visit to Las Guacas in 1896, I found several large heaps of broken metates scattered around that part of the burial-ground which had been excavated, and made rubbings on heavy Japanese paper and sketches of a number of the sculptured ornaments which covered these fragments. During the excavations carried out for Padre Velasco a relative of his had been in charge of the working force during one season. He had made a collection of drawings of the most remarkable of the sculptured metates, which had been found complete and in situ, but crushed by the pressure of the soil. Although not sufficiently accurate to warrant reproduction, these sketches, which I then procured, are of interest, showing that quite a large number of the metates had the entire under side of the plate adorned with artistic, conventionalized, anthropomorphic and zoöomorphic characters. As during my first stay in these parts no satisfactory agreement could be made with Padre Velasco for carrying on excavations at this place, I had to give up the idea of selecting material from the above-mentioned heaps. I was only able to buy a couple of large beautifully decorated metates, which had been put to actual use in the house of Antonio Carillo. I also obtained a few large, finely sculptured fragments, which were used as flagstones on the ground in his kitchen. These objects I took to the Ethnographical Museum in Stockholm.

When in 1903 I returned to Las Guacas, hoping to more thoroughly examine and recover part of the rich material which I had seen in the heaps, I found to my great disappointment that hardly anything remained. A considerable part of it had been used in constructing the walls of a large oven for sugar-manufacturing and the remaining pieces had been buried again during further excavations. On my first visit to the home of Padre Velasco in Santa Cruz he showed me in a large room more than three hundred metates from Las Guacas placed upon one another in rows and covering the wall up to the ceiling. On my second visit this collection was considerably reduced. Padre Velasco was constantly supplying the inhabitants of Santa Cruz, Nicoya, and the surrounding country with ancient metates from Las Guacas for household use. They were sold by him for eight to fourteen pesos apiece, and he had been able for a long time to satisfy the demand of the whole district. Only in a very few houses did I find modern metates from Puntarenas, which town imports the stones from Nicaragua. Occasionally a few are procured from the highlands, where they are manufactured at Cartago. According to the information and calculation of Padre Velasco, Antonio Carillo, and men employed on the excavations, there must at a low estimate have been found altogether two thousand metates in this burial-ground, though a very large portion of them were broken. In no other locality in Costa Rica, or for that matter in the whole of Central America, as far as my knowledge goes, has any similar extraordinary number of these implements been located in a single burial-ground. During my excavations on the spot, when about fifty complete metates were exhumed, not a single complete rubbing stone was discovered. Only a couple of small fragments were brought to light. On the contrary, in my previous excavations at Las Casitas I found "los manos" with several metates. Almost all the rubbing stones here used were cylindrical and more or less flattened, and so much longer than the breadth of the metate that the hands of the women when grinding could comfortably grasp both ends of the grinder on either side.

All the metates of Las Guacas, so far as I have been able to ascertain, are provided with three legs. There are two distinct types, distinguished by the shape of the legs, viz.: those with *cylindrical*, or in some cases *conical* legs, and those with *flat, nearly triangular* legs. In both groups the plate is evenly and gently curved upward before and behind; only a comparatively small number of specimens of the first group have a shallow depression deepening from all sides to the middle.

Specimens belonging to the former group are by far the most numerous. Of fifty-two metates which I excavated at Las Guacas only three belonged to the latter group. The metates of this group are, as a rule, of considerably larger size, the

average measurements being about fifty centimeters in length and thirty centimeters in breadth. At Las Guacas, however, I measured broken specimens of the immense size of one and a half meter in length and sometimes of a meter in width, and I also encountered diminutive specimens, like those figured on Pl. III, Figs. 1, 2. The latter undoubtedly were made for children. The breadth of the plate in the group with cylindrical legs is, as a rule, proportionately much larger than in the latter. In the former group by far the greatest number of specimens are plain without any ornamentation. Of the forty-nine specimens of this group, which I encountered during my excavations, thirty-three were plain, two decorated only on the upper side at both ends with a broad band with geometrical designs, four had similar decorative bands on the under side, either at both ends, or enframing the whole surface, six were decorated with bands on both the upper and lower sides, while four showed the enframed under side filled up with representations of highly conventionalized animal or human forms or with geometrical designs. The ornamentation of the cylindrical legs is prevalently limited to the lower end and is simply annular or composed of vertical grooves. The cylindrical legs are never perforated.

The second group having the flattened triangular legs, although much smaller, is the most interesting and most highly artistic. Though I myself found only three examples, I encountered in the burial-ground numerous scattered fragments of this type, and from Padre Velasco I secured a number of the best specimens which he had obtained. As has been observed, these metates are generally rather small in size and with a narrow plate, the average measurement being fifteen by seven centimeters. The plate is even and curved upward before and behind, but never hollowed out, or dished. They are cut from the most finely grained basaltic lava, and display in common several peculiar features, as has already been shown in the specimens described. Only a few specimens more crudely made are devoid of ornamentation, but most of them show lavishly rich sculpturings, many being, except on the two-thirds of the upper side of the plate which is used for grinding, entirely covered with ornamentation. These ornaments are of a different character from those found in the larger group. On the upper side there is usually a very broad rectangular field at the front end and only a narrow band at the back. While in the former group the geometrical design of the band consists of a guilloche or meander pattern, in this group a peculiar plaited or woven pattern of several variants prevails. The narrow edges of the borders of the plate in this group are, as a rule, covered with a meander design, while they are never decorated in the former group. The under side is usually covered with a plaited or highly conventionalized anthropomorphic design. Metates of this group often were evidently intended to represent in general

outline the form of some animal, and are then provided with a large, protruding head at the front, but not a single specimen of this class of metates shows any trace of the tail which always figures so prominently in the animal-shaped stools of the highlands. Others are provided with two loops at the front end. The legs, which are artistic and seldom plain, are most remarkable because of their oblong or circular perforations and the fact that they represent monkeys generally in a crouching position. The animal forms, besides that of man, embodied in, or sculptured on, metates of this group, are the monkey, the jaguar, birds of several distinct forms, and the alligator. In the first group, besides man, we find representations of the monkey, the ant-bear (one specimen), birds, and alligators, but the jaguar is conspicuously absent. This kind of metates is known, too, from other localities on the peninsula, and is said to be especially numerous at Sardinal. It may not belong to the Las Guacas culture proper, but is possibly of alien origin. However, this is one of the questions which can only be settled by future investigations.

Neither of the forms of metates found at Las Guacas is, as far as our knowledge goes at present, encountered on the highlands, or on the Atlantic coast, although of course stray pieces may have found their way to some localities. Dr. Carl Sapper in his paper "Huacas der Halb-Insel Nicoya," referred to above, makes the following statement: "The metates of the burial-ground of Las Huacas resemble the type of northern Central America in the respect that both forms are provided with three legs, while the metates of the highlands of Costa Rica and those of the province of Chiriqui have four legs." When Sapper speaks of the metates on the highlands of Costa Rica having four legs, he undoubtedly refers to the small, artistically executed metate-shaped implements, which forms in the publications of W. H. Holmes and others have been generally designated as "stools," and are supposed to have had only ceremonial uses. The common household metates or grinding stones of the highlands, besides the flat natural boulders, are mostly small, crude, flat, and provided with three small knobs as legs. On Pl. 15, Fig. 4, in my "Archæological Researches in Costa Rica," there is shown a typical specimen of the metate of the highlands, excavated by me at Williamsburg on the Atlantic coast, where the same form also prevails. Pl. 78, Fig. 9, in the same work illustrates a typical specimen of the grinding-stone used with the metate of the highlands. It is rectangular, flat, and of small size. No attention, however, was paid by collectors to these simple objects in former times, undoubtedly on account of their entire lack of decorative features.

Besides these metates there occurs at certain localities on the highlands, principally near San José, another type of metates having the shape of a low three-

legged table with cylindrical, tapering legs. The plate is never curved as in the Nicoyan forms, but is entirely flat, and surrounded with a low elevated rim. It is rectangular in shape with somewhat rounded corners and of considerable thickness. Most of the specimens appear decorated with a succession of knobs representing small rudely executed animal heads along the lower border of the rim, others are plain. Dr. Ferraz¹⁰ found not less than nine similarly decorated metates associated with the very remarkable "mesa altar" he has described from San Isidro near the capital. I obtained four specimens for the Carnegie Museum from the same neighborhood. Metates with four legs are today common in the houses of the present inhabitants on the highlands, but these are all of modern manufacture from the stone-quarries near Cartago. None of a similar shape has been found in any of the ancient graves or sites.

The Nicoyan type of metate, having flat, triangular, and perforated legs, has been already illustrated by Squier¹¹ from Nicaragua by a specimen described as having been dug up at Leon during his residence there.

Further north along the same coast in the parts of Salvador and Guatemala which I visited, these metates are supplanted by crude forms, usually devoid of ornament. South of Nicoya on the mainland of Costa Rica the types under discussion are replaced by another of oval shape, concave, and without legs, which I discovered in my excavations at Carrizal near Puntarenas.

In contrast to the superb ancient metates of this portion of Costa Rica it is of interest to compare those in actual use today by the Talamanca Indians of South-eastern Costa Rica. Their stone mills (see Pl. XXI) still used in every palenque are the most primitive ever used by man, consisting of a large flat river boulder on top of which is placed another smaller, but still unusually large, oval, heavy crushing stone, which the woman works with a partly rocking motion when preparing the corn. This type of rocking mills perhaps points back to a time when corn was not known at all or of little importance in comparison with various hard-shelled fruits of trees, some of which are still employed at times when there is a failure of the crop of corn.

The lavish ornamentation of the Nicoyan metates is remarkable. Even the under side of the plates of these artefacts has been embellished with elaborate designs. This has rarely been observed outside of the area of this Central American culture. Figures of the only two specimens of metates thus ornamented from

¹⁰Ferraz, Juan Fernaudez: "Informe Relativo al Año Economico de 1899-1900 del Museo Nacional de Costa Rica." San José, 1900, p. 23.

¹¹Squier, E. G., "Nicaragua, Its People, Scenery, etc." New York, 1860, pp. 256-7.

other localities which have come to my knowledge are here reproduced. Figure 63 shows a metate given by Strebel in his "Alt Mexico," Vol. II, Pl. XIV, Fig. 10. This metate was found in the region of Jalapa and Coatepec, in the state of Vera



FIG. 63. Metate from the State of Vera Cruz, Mexico.

Cruz. Strebel identifies the animal as "a frog or a lizard." The metate illustrated by Figures 64 and 65, which strikingly resembles the former, is supposed to have been obtained in Guatemala. It is contained in the famous collection of an-



FIG. 64. Under side of metate in collection of Mr. George G. Heye. $\frac{1}{4}$.

tiquities formerly belonging to Joseph Jones, now in the possession of Mr. George G. Heye of New York City. The figure plainly represents a puma or some allied animal. Length 36 cm., breadth 27 cm.

The similarities in shape and ornamentation between the metates of Guanacaste and those of Porto Rico and other islands of the West Indies have been pointed out by Dr. J. Walter Fewkes and others.

Description of some of the most interesting forms of the metates of the Velasco collections and of specimens purchased by me at Las Guacas, in 1896, from Antonio Carillo follow.



Fig. 65. Side view of metate in collection of Mr. George G. Heye. $\frac{1}{4}$.

1. *Metates with cylindrical or conical legs.*

1. (Pl. X, Figs. 3, 4; Pl. XI, Fig. 1.) Large rectangular metate. On the upper side there is at each end a broad band, filled with a guilloche design. Inside the frame there is a design, which judging from less conventionalized figures on other metates from this burial-ground, may stand for two opposing human figures with large head-dresses. The legs of the metate are ornamented with encircling and longitudinal grooves. Broken in two places; one leg missing. This metate had been used in Carillo's household, but was discarded and procured for the Stockholm Museum. Length 64.5 cm., breadth 38.5 cm., height 21 cm.

2. (Pl. XI, Figs. 2, 3, 4.) Large, rectangular metate with the upper side ornamented at each end by a broad band with a guilloche design. The under side is enframed by four narrow, parallel bands, and this frame encloses what probably stands for the detached limbs of two opposing highly conventionalized human figures. The legs of the metate are encircled by parallel grooves. One leg having been broken off, I was able to secure this superb specimen from Carillo for the Stockholm Museum. Length 61 cm., breadth 41 cm., height 21.6 cm.

3. (Pl. XII, Figs. 1, 2.) Metate with the upper side of the plate plain, the under side covered with a realistic figure of a monkey with outstretched limbs and with the end of the tail curved. The legs of the metate are encircled at the middle with two grooves from which four or five straight parallel vertical grooves descend to the end of the legs. Length 48.5 cm., breadth 28 cm., height 16 cm. (Cat. No. $\frac{2939}{3431}$.)

4. (Pl. XIII, Figs. 1, 2.) Metate with the upper side at both ends adorned with a broad band with a meander design, which at each end terminates in a highly conventionalized animal (alligator) head. The under side presents a broad sculptured frame of intricate double meander design and in the middle of the rectangular enclosure there is a realistic figure of a monkey in sitting position with both arms held up in front of the face and the tail turned up above the head and almost coiled round the leg of the metate. The lower half of the metate-legs is adorned principally with vertical grooved ornamentation. Length 34 cm., breadth 24 cm., height 11.5 cm. (Cat. No. $\frac{2438}{1412}$.)

5. (Pl. XII, Figs. 3, 4.) Metate with the upper side plain, the under side occupied by the design of an alligator with outstretched legs, inside a broad frame of intricate geometrical designs. The lower ends of the legs are adorned with an encircling elevated band, from which parallel vertical grooves descend to the end of the legs. Length 53 cm., breadth 33.5 cm., height 18 cm. (Cat. No. $\frac{2438}{1413}$.)

6. (Pl. XIV, Figs. 3, 4.) Metate with the upper side plain, the lower side showing on its surface two crude animal forms (alligators?) with outstretched limbs and tails extended upon the legs of the metate, 35 cm. long. The whole under side is enframed by an elevated ridge. The legs are conical and short. Length 57 cm., breadth 37 cm., height 10.5 cm. (Cat. No. $\frac{2939}{3429}$.)

7. (Pl. XIV, Figs. 1, 2.) Small metate with the upper side plain, the under side entirely covered with sculptured designs in relief, representing two large and one small alligator, with outstretched limbs, enframed by an elevated ridge, which is notched at one side. Legs encircled by parallel, notched bands. Length 36 cm., breadth 27.5 cm., height 8.5 cm. (Cat. No. $\frac{2939}{3430}$.)

8. (Pl. XIII, Figs. 3, 4.) Small metate with the upper side plain, the under side covered with the sculptured figure of a human being with arms and legs spread, fingers and toes marked, the head adorned with a head-dress and large bell-shaped ear-plugs. The space under the right arm seems to be filled up with a small roughly executed figure with head-dress, and below the left arm there appears to be the design of a head-dress. The legs are adorned with three parallel encircling grooves near the ends. Length 35 cm., breadth 22.5 cm., height 9.5 cm. (Cat. No. $\frac{2438}{1411}$.)

2. *Metates with flattened triangular legs.*

1. (Pl. XV, Figs. 1-4.) Metate with the upper side adorned at the front with a sculptured field 10.5 cm. broad, with a plaited knot-design and at the back end with a narrow band with a simple angular design. The margins of the sides are adorned with a simple design of three or four short parallel lines alternately placed

in horizontal and vertical positions. On the under side at the front end there are two oblong loops, each probably representing the united arms of a highly conventionalized human or simian figure. Each of the legs of the metate is formed by a simian figure in sitting position, the tail extended parallel to the back and joined to the neck. Length 38 cm., breadth 18 cm., height 15 cm. (Cat. No. $\frac{2438}{1410}$.)

2. (Pl. XVI, Figs. 1-4.) Metate of the same type as the above. The upper side shows a rectangular broad field with a plaited knot-design at the front end, but none at the back. The under side is occupied by a plaited design, possibly representing a highly conventionalized human figure. The legs of the metate, which are provided with longitudinal slits, represent squatting simian figures. The double loops at the front end resemble the heads of birds. Length 47 cm., breadth 28.5 cm., height 12.5 cm. (Cat. No. $\frac{2939}{3428}$.)

3. (Pl. XVII, Figs. 1, 2.) Metate of the same type as the preceding. The upper side is adorned with a much worn plaited knot-design at the front. At the back there is a narrow band with the decoration worn off. The under side is covered with a peculiar band-like design, possibly representing a conventionalized human face and body. The loops at the front are broken. The legs have longitudinal slits and apparently originally represented squatting simian figures, as seen in the former and many other related specimens, but the original outlines apparently have been lost. Length 34 cm., breadth 18 cm., height 13.4 cm. (Cat. No. $\frac{2438}{309}$.)

4. (Pl. XVII, Figs. 3, 4.) Metate in the shape of a jaguar with a large hollow head protruding from the front. The upper side shows at the front end a broad sculptured band with two highly conventionalized human faces. This ornamentation extends over the back and sides of the neck. (Compare Pl. IX, Fig. 2.) At the back there is a narrower band with meander design. The edges of the long sides are also covered with meander designs. The under side is plain. The legs have longitudinal slits. Length 50 cm., breadth 20.5 cm., height 12.5 cm. (Cat. No. $\frac{2939}{3427}$.)

5. (Pl. XVIII, Figs. 1, 2, 3.) Metate in the shape of a jaguar with protruding hollow head. The upper side has at the front a broad rectangular field adorned with a plaited knot and with meander and other geometrical designs. At the back there is a narrow band with a meander design. The neck and top of the head, the side edges of the plate, and the legs are also adorned, mostly with meander designs. The legs are each perforated with two circular holes. Length 69 cm., breadth 28 cm., height 22.5 cm. The specimen belongs to the National Museum in San José. Obtained from Nicoya.

6. (Pl. XVIII, Fig. 4.) Metate of unique shape. A large, oblong, hollow and

ornamented animal head serves as the front leg, extending in a vertical position from the front edge of the plate. The hind legs have each two perforations surrounded by grooves. Length 40 cm., breadth 20 cm., height 14.5 cm. The specimen is contained in the National Museum in San José. The locality, probably by mistake, is given as Aguas Calientes in the highlands.

7. (Pl. XIX, Fig. 1.) Metate with a large bird head protruding in front, the long narrow beak curved and joined to the front leg of the metate. The upper side of the plate is adorned with a broad band with a plaited knot design (?) and a narrow band with meander designs at the back. The almost rectangular legs are adorned with two parallel grooves along the edges on the outside. The front leg has three, each of the hind legs two slits. Length 45 cm., breadth 20 cm., height 15 cm. (National Museum of Costa Rica.)

8. (Pl. XX, Figs. 1, 2.) Metate in the shape of a bird with crested head. The upper side shows as usual a broader band, a plaited or woven design at the front end, and a narrower band with meander pattern at the back. The edges of the long sides are adorned with two short parallel bands alternately placed horizontally and vertically. The legs are covered with simple geometrical designs. The front leg has three, each of the hind legs two, longitudinal slits. Length 53.5 cm., breadth 24 cm., height 17 cm. (Cat. No. $\frac{2939}{3425}$.)

9. (Pl. XX, Figs. 3, 4.) Metate in the shape of a bird with long curved neck and a large beak, the head adorned with three rows of feathers, six in each. On the upper side there is a broader field with a plaited design at the front and a narrower band with a meander design at the back. The side edges are also adorned with a meander design. The under side is plain. The legs are broken, showing longitudinal slits. Length 55.5 cm., breadth 22 cm. (Cat. No. $\frac{2939}{3425}$.)

10. (Pl. XIX, Figs. 2, 3, 4.) Metate with a small rudely designed head of a bird (?) protruding from under the edge of the front end. The upper side shows at the front a beautiful regularly plaited design. The under side is covered with another plaited design, possibly that of a human figure. The legs are without ornaments or perforations. Length 48 cm., breadth 44.5 cm., height 13.5 cm. (Cat. No. $\frac{2438}{1408}$.)

RUBBERS OR GRINDING-STONES.

1. *Cylindrical Grinding-stones.*

As already mentioned nearly all the grinding-stones, or rubbing-stones for metates, which have been found at Las Guacas, are flattened cylindrical and entirely devoid of ornamentation. Only a single specimen, which was richly sculp-

tured at one end, was encountered here, and was for some time in the possession of Velasco. Two typical specimens of the cylindrical stones are illustrated.

(a) (Pl. V, Fig. 2.) Grinding stone of basaltic lava. Excavated by the writer at Las Casitas, now in the Stockholm Museum. Length 47 cm.

(b) (Pl. V, Fig. 3.) Grinding-stone of the same material. Excavated at Las Guacas by Carillo, and now in the Stockholm Museum. Length 56.8 cm.

2. *Stirrup-shaped Grinding-stones.*

Only a few specimens of this singular, highly developed form of grinding-stone have been found at Las Guacas. When using this tool the worker grasped the side bars with both hands, the thumbs resting on the top bar. Several metates on which only these, or other small, simple, grinding-stones with a convex base could have been used, have been encountered at Las Guacas. One similar metate, which I exhumed, is illustrated on Pl. III, Fig. 5. The stirrup-shaped form of rubbing-stone has been encountered in a few localities in the highlands also, as on Irazu, and by me at Orosi. (See Pl. 69, Fig. 1, in "Archæological Researches in Costa Rica.") In 1896 I discovered some specimens during excavations at Carrizal near Puntarenas. Nowhere in Costa Rica has this form been found in any number. The center for its distribution is still unknown. Some specimens are illustrated on Pl. XXII. They are all made of basaltic lava.

(a) (Pl. XXII, Fig. 6.) Grinding-stone, ornamented with five knobs on the top bar, the central opening oval, base slightly curved, convex, showing wear from use. Height 13.8 cm., breadth 14 cm. (Cat. No. $\frac{2438}{1402}$.)

(b) (Pl. XXII, Fig. 4.) Grinding-stone with two opposing human heads sculptured on the top corners. Base curved, convex, central opening almost rectangular. Found at Aguas Calientes in the highlands. Reproduced for comparison. Height 15 cm., breadth 15 cm. (Nat. Mus. of Costa Rica.)

(c) (Pl. XXII, Fig. 3.) Grinding-stone with a small bird on the top bar. Base almost straight, convex, central opening nearly square. Height 12.2 cm., breadth 11.7 cm. Found in Nicoya. (J. Cooper.) (Nat. Mus. of Costa Rica.)

(d) (Pl. XXII, Fig. 2.) Grinding-stone with saddle-shaped top bar, the ends of which are each adorned with a human head. Base curved, convex. Height 13.5 cm., breadth 14.5 cm. Found at Aguas Calientes (?) in the highlands. (Nat. Mus. of Costa Rica.)

(e) (Pl. XXII, Fig. 1.) Grinding-stone, representing a highly conventionalized human face with head ornament. The head-dress is composed of two opposing animal heads. Compare with the ornamentation of celt-shaped amulets (Pl.

XXXIV., Figs. 1-8). The eyes and mouth are represented by the openings. Base nearly straight. Height 11.4 cm., breadth 14.3 cm. (Cat. No. $\frac{2438}{1404}$.)

(f) (Pl. XXII, Fig. 5.) Grinding-stone with two knobs on the top for strengthening the grasp of the hands, base nearly straight. Some similar form, which for carrying or suspension was perforated at the center, afterwards presumably served as a prototype for the stirrup-shaped form. Height 8.5 cm., length 14.5 cm. (Cat. No. $\frac{2939}{3422}$.)

The stirrup-shaped grinding-stone has not been found in any other state of Central America, but it occurs in Mexico. In Dr. Hermann Strebel's work, "Alt-Mexico," there are figured two specimens from the state of Vera Cruz. Both specimens are described as mullers, one of them having been found in the Misantla region, and probably the other also. (Compare "Alt-Mexico," Vol. II, Pl. VIII, Figs. 54, 55.) According to information given me by the German archeological explorer, Dr. Wilhelm Bauer of the city of Mexico, similarly shaped implements are met with, although sparingly, in the valley of Mexico.

Passing northward no stone implement of this shape is met with before the northwestern coast of British Columbia and Alaska is reached. In an article in the "American Anthropologist" Harlan I. Smith¹² figures and describes three stone implements of forms in the main resembling those of southern origin mentioned above. "These implements or hammers," writes Smith, "seem to have been used for rubbing as well as for pounding."

On the South American continent this kind of rubbing-stone never seems to have been encountered.

On the island of Kauai in Hawaii the natives made use of poi-pounders, implements having the shape of rings or stirrups, resembling the American forms, but not used for rubbing purposes. (Compare Figure 61 in "Handbook to the Bernice Pauahi Bishop Museum in Honolulu" by Dr. William T. Brigham.)

(b) *Celts.*

Celts are very numerous at Las Guacas, having been encountered in thousands, although only a comparatively small portion of those found were preserved. The commonest celts, which are most typical of this burial-ground, are unusually long and thick in comparison with those usually found in Central America, the average length being between twelve and eighteen centimeters, and the width from four to seven centimeters. However, a number of smaller specimens also occur. In shape

¹²Smith, Harlan I., "Stone Hammers or Pestles of the North West Coast of America," *American Anthropologist* (N. S.), Vol. I., April, 1899, pp. 363-369.

the celts vary in section from oblong elliptical to nearly circular. The edge is curved, in some specimens nearly semicircular, only in a few specimens straight. They are nearly all made of very finely grained greenstone, varying in color from light-gray to yellowish. They are beautifully polished, except at the upper end, which served for hafting.

The hundreds of specimens from Las Guacas, which I have observed, show unbroken edges without any splits or marks of battering. Very likely these tools served for cutting down forest trees, when clearing the ground in the manner which was customary in the region. In felling trees the natives resorted to the use of fire, with their stone axes chopping away the charred wood, when the trunk near the base had been partially consumed. They may have served also as tools for making canoes and household objects of wood. Possibly too they were used as weapons, but never as chisels or wedges by stone-cutters, as undoubtedly was the case in the highlands, as at Orosi. There similar celt-shaped tools often were employed for splitting and shaping the stone slabs for the cists, to judge by their badly mutilated and split edges. (Compare my "Archæological Researches in Costa Rica.")

At Las Guacas no celt of the common type of the highlands, having a distinctly angular section, seems to have been found.

Pl. XXIII, Figs. 1-5 and Fig. 7 shows some of the commonest types of the celts of Las Guacas. Pl. XXIII, Fig. 3, illustrates a form with nearly parallel straight sides and well rounded section. Pl. XXIII, Fig. 1, shows a nearly bell-shaped specimen, which is rather rare, and Pl. XXIII, Fig. 5, illustrates another rare variety, which is contracted at the upper end. Celts seem to have been the principal stone tools of the Indians of Nicoya.

Comparison may be made with the celts illustrated by Figs. 18, 50, and 55 in the text.

The measurements of the celts illustrated on Pl. XXIII are the following :

Fig. 1.	Length 18.8 cm.,	breadth 7 cm.,	thickness 5.4 cm.
Fig. 2.	" 19 cm.,	" 9.3 cm.,	" 5.5 cm.
Fig. 3.	" 22.1 cm.,	" 6.2 cm.,	" 4.9 cm.
Fig. 4.	" 16.3 cm.,	" 6.8 cm.,	" 3.7 cm.
Fig. 5.	" 13.5 cm.,	" 6.9 cm.,	" 4 cm.
Fig. 7.	" 5.4 cm.,	" 5.4 cm.,	" 2.2 cm.

Two celts were found at Las Guacas, which are adorned with incised geometrical designs. One is shown on Pl. XXXIV, Fig. 9.

(a) (Pl. XXXIV, Fig. 9.) Celt of serpentine (?) adorned on each side with a transverse incised band inclosing a row of three circular incisions, each having a

round depression in the middle. Below the band there is also on each side a similar circular mark, resembling those often used in zoöomorphic celts for indicating the eye. This specimen has no hole for suspension. Length 7.3 cm., breadth 3 cm. (Cat. No. $\frac{2939}{1625}$.)

(b) (Pl. XXXIV, Fig. 14.) Celt of serpentine (?) resembling Fig. 9 on the same plate. No hole for suspension. Length 7.9 cm., breadth 2.9 cm. (Cat. No. $\frac{2939}{1624}$.)

(c) *Axes.*

There occurred in this burial-ground at Las Guacas two forms of large, double-bladed, sharp-edged axes. Figs. 1 and 2, on Pl. XXIV, illustrate one form, which is almost semilunar, with two conical sharp knobs on the upper convex side. Figs. 3 and 4, on Pl. XXIV, show another and commoner form, having two broad blades. During the excavations of Padre Velasco similar axes were sparingly found in various parts of the burial-ground. They seem never to have been met with in any number. I found a few specimens in my excavations at Las Casitas and one at Las Guacas, the latter figured on Pl. I, Fig. 1, and described above. All of these axes are of slate and probably served as battle-axes. The measurements of the axes illustrated on Pl. XXIV, are the following:

Fig. 1. Length 20.2 cm., breadth at the center 5.1 cm., thickness 4.3 cm.

Fig. 2. Length 14.6 cm., breadth at the center 4.8 cm., thickness 3.1 cm.

Fig. 3. Length 15.9 cm., breadth 5.9 cm., thickness 2.4 cm.

Fig. 4. Length 15.8 cm., breadth 4.7 cm., thickness 3.2 cm.

A unique specimen of a double-bladed ax is illustrated on Pl. XXXIII, Fig. 6. It is provided with two elevated parallel and transverse bands representing the strings for the hafting. Length 13.8 cm., breadth at the middle 5.2 cm.

(d) *Bark-scrapers.*

A number of these small, neat, and elaborately executed tools were in use among the Indians of Las Guacas. (Compare the notes upon these objects in the description of the specimen I found at Las Guacas, p. 31.) Pl. XXIII, Figs. 8, 9, 10, shows three bark-scrapers in the collections of Padre Velasco varying in shape. Pl. XXIII, Figs. 8 and 9, are both double-grooved. Pl. XXIII, Fig. 10, displays three longitudinal grooves on the upper side, the specimen perhaps having not been completed by its maker. The measurements of the bark-scrapers on Pl. XXIII, are the following:

Fig. 8. Length 7.9 cm., breadth 6.2 cm. (Cat. No. $\frac{2438}{275}$.)

Fig. 9. Length 6.2 cm., breadth 5.5 cm. (Cat. No. $\frac{2438}{276}$.)

Fig. 10. Length 8.6 cm., breadth 6.9 cm. (Cat. No. $\frac{2939}{77}$.)

(c) Polishing Stones.

These are extremely numerous and usually consist of pebbles from streams or the seashore. They are nearly all of more or less translucent agate and about the size of a pigeon's egg. They were probably used principally for polishing earthenware. Several specimens have been figured (see Figs. 19, 21, 22, 44, 45 in the text).

(f) Various Stone Implements.

Among the numerous objects excavated by the force employed by Padre Velasco at Las Guacas there undoubtedly were a large number of simple tools and other worked stones, which, being devoid of any ornamental appearance, were again buried or lost. Among those which escaped this fate there are a few which are described below.



FIG. 66 Cutting-tool of slate. (Cat. No. $\frac{2939}{1633}$.) $\frac{1}{2}$.

(a) (Pl. XXXII, Figs. 1, 2.) Shows two views of a block of pale green bowenite, from which celts have been cut. It was found by the writer in soil thrown up at Las Guacas. The length is 11 cm., the breadth 3.9 cm. (Cat. No. $\frac{2793}{126}$.)

(b) (Pl. XXXII, Figs. 3, 4.) Represents a large pebble of bluish-green jade from which celt-shaped amulets were cut. Fig. 4 shows one of the sides of the pebble upon which the beginning of a cut has been made. Length 11.8 cm., breadth 6.2 cm. (Cat. No. $\frac{2939}{80}$.)

(c) (Pl. XXXII, Fig. 5.) Represents a cylindrical core of gray stone, which had been evidently bored out of the block by working from both sides, probably for a bannerstone. Length 4.1 cm., diameter 2.5 cm. (Cat. No. $\frac{2939}{81}$.)

(d) (Pl. XXXII, Fig. 6.) Portion of the hollow animal head of a metate, showing the eye. Found by the writer in the neighborhood of Las Guacas. Compare Pl. XVIII, Fig. 4. Length 12.7 cm. (Cat. No. $\frac{2793}{127}$.)

(e) (Pl. XXXII, Fig. 7.) Arrow-head of chipped chert. Length 6.7 cm., breadth 2 cm. (Cat. No. $\frac{2438}{41}$.)

(f) (Pl. XXXII, Fig. 8.) Smoothing or polishing stone. It is of slate, celt-shaped, flat, and thin. Length 18.6 cm., breadth 5.9 cm. (Cat. No. $\frac{2438}{44}$.)

(g) (Pl. XXXVII, Figs. 25-26.) Sharpening or polishing tool. An oblong, flat, thin piece of black slate, which on both sides shows several longitudinal grooves. Length 14.5 cm., breadth 6.5 cm., thickness 1.4 cm. (Cat. No. $\frac{2438}{45}$.)

(h) (Fig. 66.) Thin cutting tool, semilunar in shape, of black slate, with a sharp edge. Length 12.5 cm., breadth 4.3 cm.

(g) Banner-stones or Club-heads.

A group of stone objects of highly interesting and rather unique character found in the burial-ground at Las Guacas are the banner-stones or ornamental clubs or maces. Concerning this group of stone artefacts what has been said above regarding metates may be repeated. At no other locality in all Central America, so far as I have been able to ascertain, has such a large number of similar implements been found. On the uplands of Costa Rica, with the exception of the beautiful double-bladed serrated ax or banner-stone (Archæological Researches in Costa Rica, Pl. 60, Fig. 6), which form seems to be limited to the burial-grounds of a small district near Cartago, only a few clubs, shaped like rings or cog-wheels, have been here and there encountered. In the vicinity of San José there were exhumed during my last stay in an ancient burial-ground a few clubs of the type of those found at Las Guacas, which I procured. They had probably in olden time found their way to this place through barter. On the peninsula of Nicoya it seems strangely enough that this class of implements has as yet never been found at any other spot than Las Guacas. Future excavations, however, will show the limits of their distribution in these parts. Nearly all of these clubs represent a head, human or animal. They can be classified in groups according to their shape. They represent, 1, *human heads*; 2, *mammal heads*; 3, *the heads of birds*; 4, *birds*; 5, *two-legged monsters*; 6, *alligators*; 7, *clubs without any zoömorphic characters*. All the clubs are comparatively small and are perforated in the center by a large circular hole for the handle which has been drilled through them. In the head-shaped clubs it is the large and heavy front portion which is carved into a face or head, while the posterior half is simply ring-shaped with rather thin walls. In the clubs which embody birds or alligators and have the perforations in the center of the body, the back portion (tail) is cone-shaped. The highly ornamental, zoömorphic features of these implements and their size, which is in many cases too small to have admitted of their use for practical purposes, bear witness to their purely symbolical and ceremonial character.

Most of these clubs illustrate in the most perfect manner the employment of the hollow cylindrical drill. The center perforation or shaft-hole often plainly shows a succession of circular striæ at regular intervals, and in the middle there is often a deeper furrow, where the borings from each end met. Pl. XXXII, Fig. 5, illustrates one of the detached cylindrical center-cores of a club. The ridge at the meeting place near the middle is plainly visible on this specimen. On many of the heads the circular base of the core is purposely left in order to form an eye or an ear. It is possible that in the round pits, which have served as eyes in many of these objects, pieces of mother-of-pearl or other perishable material were inserted.

Some of the central shaft-holes are plain and smooth all through, showing no furrow near the middle. In some specimens the hole might have been formed by drilling from only one side.

As is well known, it was with water and fine hard sand that this drilling was done. Dr. Charles Rau in his essay¹³ writes: "It is very likely that the hollow drills of the aborigines of North America were pieces of that hard and tough cane, *Arundinaria macrosperma* Michaux, which grows abundantly in the southern part of the United States, mostly along the banks of large rivers, and forms at present an article of trade being used for pipe-stems and fishing-rods. This cane varies considerably in thickness; sometimes as thin as a straw, it assumes, when fully grown, the diametral proportions of a strong rifle-barrel and even of larger cylindrical objects, in which case it reaches the enormous height of 25-30 feet. A piece of this cane from which the knotty joints have been cut, forms a regular hollow cylinder sufficiently strong to be used as a drill."

Professor W. H. Holmes in his "Archæological Studies among the Ancient Cities of Mexico," Part II, pp. 304-309, describes an onyx tablet from the valley of Mexico which had broken and revealed the presence of a tubular drill of bone probably from the leg of a crane or other large bird, 2.75 inches long and 0.375 of an inch in diameter. It was shattered and worn at the upper end, while the lower end or point had the appearance of having been freshly cut off.

Professor M. H. Saville in the "Bulletin of the American Museum of Natural History," Vol. XIII, Article XI, pp. 105-107, has described and figured an onyx jar in process of manufacture, which was found in Oaxaca. This specimen illustrates the use of the hollow drill in exactly the same manner as the club-heads.

In the neighborhood of the pueblo of Nicoya near ancient remains I observed spots covered with thickets of an *Arundinaria* sp., undoubtedly in former times cultivated here. From an Indian I obtained a flute which he had made from a piece of this kind of cane. In Salvador amongst the Pipiles I found this same cane in certain localities planted on their fields and used extensively for the manufacture of baskets, screens, etc.¹⁴

Some specimens of the clubs show circular pits for eyes, which have been made with a solid body, probably a wooden stick. These pits are conical, not very deep, and show no circular striæ.

To judge from the thickness of the walls left by the hollow drill most of the larger drill-holes of the clubs apparently could have been produced with similar

¹³ Rau, Charles, "Drilling in stone without metal," Smithsonian Report, 1868, p. 399.

¹⁴ Hartman, C. V., "Ethnografiska Undersökningar Salvador," Stockholm, 1901, p. 308.

canes. For the smaller cylindrical holes, however, some tube with much thinner walls must have been employed, a tool of metal or bone.

1. *Bannerstones Having the Shape of Human Heads.*

(a) (Pl. XXV, Fig. 7.) Head of brown stone (impure gypsum?), the front adorned with a hair ribbon of herring-bone design; eyes represented by oblong conical pits, mouth wide open, ears very large. Height 5.8 cm., breadth 6.8 cm. (Cat. No. $\frac{2939}{213}$.)

(b) (Pl. XXV, Fig. 6.) Head of gray gypsum with projecting ears, the eyes indicated by round conical pits. Height 5 cm., breadth 8.9 cm. (Cat. No. $\frac{2438}{256}$.)

(c) (Pl. XXV, Fig. 3.) Head of jade with a parrot with spread wings seated on its top. This is the only club-head in the collection which, instead of having an annular perforation through the center, is partly hollowed out from behind and has holes for fastening to the staff drilled through to the base of the wings. The teeth of this head consist of the walls left between the drill holes of the opening of the mouth. Height of object 8.5 cm., breadth of head 5.4 cm. (Cat. No. $\frac{9239}{214}$.)

(d) (Pl. XXV, Figs. 4-5.) Finely executed death's head of opaque, white, polished stone. The teeth in both jaws are distinctly marked by rectangular incisions. The mouth has been formed by sawing from the front and drilling from one corner of the mouth to the opposite. The eyes are each formed by one hollow drill-hole, the base of the core, which has been removed, serving as the pupil. The ears are made by first applying a large hollow drill and leaving the base of the circular core in its place, upon which the center is again drilled with a small circular hole. Height 8.4 cm., length 10.9 cm. (Nat. Mus. of Costa Rica, No. 8923.)

(e) (Pl. XXV, Figs. 1-2.) Death's head of white, polished stone. In this specimen the mouth has been made by drilling from one corner of the mouth to the other and by two drill holes from the front, the walls serving as teeth. There are also tooth marks on what appear as the lips. Height 7.3 cm., length 9.9 cm. (Nat. Mus. of Costa Rica No. 10966.)

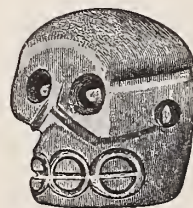


Fig. 67. Death's head from Chichen-Itza. $\frac{1}{4}$.

Fig. 67. A death's head somewhat resembling the above was found at the ruins of Chichen-Itza in Yucatan and is here reproduced for comparison. It was figured and described by Dr. Arthur Scott¹⁵ and also reproduced by Dr. Charles Rau.¹⁶ It is described as made of silicified wood, measuring 0.25 by 0.22 cm. and to have in

¹⁵Scott, Arthur, Remarks on Ancient Relics of Maya Sculpture. Smithsonian Report, 1871, pp. 423-435.

¹⁶Rau, Charles, Archæological Collections of the United States National Museum. Smithsonian Contributions to Knowledge, 1876, p. 55.

the place of ears two holes bored, one laterally and one from the back, so as to meet each other at a right angle.

As seen in the figure the eyes, teeth, and earholes are all formed with a hollow drill. The drilled teeth in this specimen are, however, executed in a manner different from that of the Costa Rican stone heads. The mouth consists of a row of four rings of equal size, which by a diagonal straight narrow groove are divided at the center, thus forming four half-circular teeth in each jaw.

2. Mammal Heads.

(a) (Pl. XXVI, Fig. 1.) Head resembling that of a dog, of grayish white quartz (?). Height 4.9 cm., breadth 7.5 cm. (Cat. No. $\frac{2939}{224}$.)

(b) (Pl. XXVI, Fig. 2.) Small head of gray stone. Height 5.6 cm., breadth 8.4 cm. (Nat. Mus. of Costa Rica, No. 3361.)

(c) (Pl. XXVI, Fig. 3.) Head of greenish-brown mottled stone, with large upturned snout, very small eyes, and large prominent teeth. Height 4.4 cm., breadth 6.2 cm. (Cat. No. $\frac{2939}{256}$.)

(d) (Pl. XXVI, Fig. 4.) Small head with upturned nose. Height 5.4 cm., breadth 9.9 cm. (Nat. Mus. of Costa Rica, No. 8922.)

(e) (Pl. XXVI, Fig. 5.) Head of opaque white gypsum. It has a fantastic shape, nose protruding, skull provided with a small cap with narrow cylindrical top. Height 7.5 cm., breadth 5.5 cm., diameter of central perforation 2.8 cm. (Cat. No. $\frac{2431}{255}$.)

(f) (Pl. XXVI, Fig. 7.) Head of whitish quartz, round in shape, resembling that of an animal like a cat. The eyes are formed of two borings, the first with a hollow cylindrical drill, and afterwards with a solid drill, which has left a conical pit serving as the pupil. The mouth is represented by a row of three circular pits, the walls left standing to form the teeth. Height 5.5 cm., breadth 5.7 cm. (Cat. No. $\frac{2939}{222}$.)

(g) (Pl. XXVI, Fig. 8.) Head of grayish-white stone, representing a monster with mouth wide open. This specimen very plainly illustrates the application of the hollow drill. Height 8.2 cm., breadth 6.3 cm. (Nat. Mus. of Costa Rica, No. 9092.)

(h) (Fig. 68.) Head of fantastic monster. Both eyes and ears are represented by cylindrical knobs. The former are placed very high up on the front, as is the nose also. The wide open mouth is formed in a peculiar manner by two vertical rows each composed of three hollow drill-holes with the wall in the center left standing. The six cylindrical cores are not removed from the base, but cut off at

the length of about 0.3 cm., serving for the teeth. The material is gray quartz traversed with white streaks. Height 7.8 cm., breadth 5.4 cm.

(i) (Fig. 69.) Head of fantastic monster of white stone, with mouth wide open



FIG. 68. Head of monster. (Cat. No. $\frac{2939}{217}$.) $\frac{1}{4}$.



FIG. 69. Head of monster. $\frac{1}{2}$.

and tongue protruding, extending under the jaw. Height 9.6 cm., length 12 cm. (Nat. Mus. of Costa Rica, No. 9031.)

3. Bird-heads.

These clubs all represent heads of parrots or owls, the former being by far the most numerous. There are many specimens showing the features of these two birds combined.

(a) (Pl. XXVII, Fig. 1.) Head of parrot of white quartz with crest. Height 6.7 cm., breadth 5 cm. (Cat. No. $\frac{2939}{232}$.)

(b) (Pl. XXVII, Fig. 2.) Head of owl of gray sandstone, with two head tufts. Height 6 cm., breadth 7.5 cm. (Cat. No. $\frac{2939}{227}$.)

(c) (Pl. XXVII, Fig. 3.) Head of owl (?) of white gypsum. Height 6 cm., breadth 8.2 cm. (Cat. No. $\frac{2939}{229}$.)

(d) (Pl. XXVII, Fig. 4.) Head of parrot made of greenish bowenite, with two tufts. Height 5.5 cm., breadth 5.5 cm. (Cat. No. $\frac{2438}{261}$.)

(e) (Pl. XXVII, Fig. 5.) Head of owl of gray sandstone. Height 6 cm., breadth 7.5 cm. (Cat. No. $\frac{2939}{230}$.)

(f) (Pl. XXVII, Fig. 6.) Head of owl (?) of white quartz. Height 6.4 cm., breadth 6.4 cm. (Cat. No. $\frac{2939}{234}$.)

4. *Birds.*

In the clubs of this class, thus far observed by me in the collections from Las Guacas only parrots are represented.

(a) (Pl. XXVIII, Fig. 1.) Parrot of gray stone. The beak is perforated with a circular hole. Height 6.7 cm., length 15.1 cm. (Cat. No. $\frac{2939}{260}$.)

(b) (Pl. XXVIII, Fig. 2.) Parrot of gray stone with large crest. Height 6.1 cm., length 14.7 cm. (Cat. No. $\frac{2939}{246}$.)

(c) (Pl. XXVIII, Figs. 3-4.) Parrot of gray stone. Height 8 cm., length 17.3 cm. (Cat. No. $\frac{2939}{245}$.)

(d) (Pl. XXVIII, Fig. 5.) Parrot of gray stone with unusually small beak. Apparently this specimen has had the beak and crest broken off, whereupon a diminutive beak was carved upon the specimen in an unusual position on the lower part of the head. Height 6.7 cm., length 14.3 cm. (Cat. No. $\frac{2939}{247}$.)

(e) (Pl. XXVIII, Fig. 6.) Parrot of brown, white-spotted stone. Behind the wings the body is encircled with a band with criss-cross markings. Below each wing there is a cross-mark. Height 7.2 cm., length 17 cm. (Cat. No. $\frac{2438}{274}$.)

(f) (Pl. XXIX, Fig. 5.) Parrot of brown stone. This object presumably owes its peculiar shape to some mishap. The broken head has been renewed and provided with a shortened beak and the object has been turned upside down, the two wings now serving as legs. Height 6.5 cm., length 10.3 cm. (Nat. Mus. of Costa Rica, No. 8936.)

5. *Two-legged monsters.*

Only a few specimens of these strange creatures having two legs, large heads, and cone-shaped tails have been found. Like the parrot last described they presumably owe their existence to mishaps. The beak of the winged birds having been broken off, the artist instead of abandoning the object, has transformed it into one of these beings by turning it upside down, using the wings as legs and sculpturing the features of a fantastic animal face on the flattened surface of the head. The legs of these creatures differ in nothing but the position from the bird-wings and even retain the feather marks.

(a) (Pl. XXIX, Fig. 1.) Animal figure of gray stone, with highly conventionalized head with strange features. Height 8.4 cm., length 12.3 cm. (Cat. No. $\frac{2939}{251}$.)

(b) (Pl. XXIX, Fig. 2.) Animal of gray stone with almost square head, broken. Height 5 cm., length 9 cm. (Cat. No. $\frac{2939}{250}$.)

(c) (Pl. XXIX, Fig. 3.) Animal of brown, white-spotted stone; head square; face flat, with four circular drill marks for eyes and nostrils. Height 7.4 cm., length 11.5 cm. (Cat. No. $\frac{2939}{252}$.)

(d) (Pl. XXIX, Fig. 4.) Animal of gray stone resembling the last. Height 6.4 cm., length 10.3 cm. (Cat. No. $\frac{2939}{248}$.)

(e) (Pl. XXIX, Fig. 6.) Animal of brown stone having a head with strange features. Height 6.4 cm., length 10.2 cm. (Cat. No. $\frac{2939}{249}$.)

6. *Alligators.*

(a) (Pl. XXX, Figs. 1-2.) Alligator of grayish-white stone with nose curved and a herring-bone design along the frontal bone. The ears are represented by cylindrical knobs, which are encircled by grooves, and may have served for securing the club to the handle. The pike-shaped tail is adorned with converging grooves. Length 15.4 cm., breadth 7.4 cm. (Nat. Mus. of Costa Rica, No. 8937.)

(b) (Pl. XXX, Fig. 3.) Alligator of white stone with broad greenish streaks. The thick heavy nose is turned up and adorned with a herring-bone design. The truncated tail is also turned upwards and adorned with two herring-bone designs, the one on the top transverse, the other on the under side longitudinal. Length 9.2 cm., breadth 7.3 cm. (Cat. No. $\frac{2939}{255}$.)

(c) (Pl. XXX, Fig. 4.) Alligator of white stone with ear knobs. Tail without ornamentation. Length 17.7 cm., breadth 7.6 cm. (Nat. Mus. of Costa Rica, No. 8942.)

(d) (Pl. XXX, Fig. 5.) Alligator of grayish white stone with slightly curved nose and a herring-bone design on the frontal bone. The pike-shaped tail is adorned with converging grooves. Length 13.6 cm., breadth 6.8 cm. (Cat. No. $\frac{2939}{253}$.)

(e) (Pl. XXX, Fig. 6.) Alligator of white stone with conical ear knobs. Length 19 cm., breadth 9 cm. (Nat. Mus. of Costa Rica, No. 8933.)

(f) (Pl. XXVI, Fig. 6.) Alligator of gray stone. Length 13.8 cm., breadth 9 cm. (Nat. Mus. of Costa Rica, No. 8927.)

(g) (Pl. XXVI, Fig. 9.) Alligator (?), highly conventionalized. Height 4.4 cm., length 10.6 cm. (Cat. No. $\frac{2939}{258}$.)

7. *Clubs Without Any Zoöomorphic Characters.*

These are comparatively few in number and do not vary much in form. The following are the commonest types.

(a) (Pl. XXXI, Fig. 1.) Club-head, ring-shaped, and having four cone-shaped protuberances, each of which is adorned with three encircling incisions. Height 4.4 cm., diameter 8.7 cm. (Nat. Mus. of Costa Rica, No. 3319.)

(b) (Pl. XXXI, Fig. 2.) Club-head of basaltic lava, star-shaped, having nine points. Diameter 10.2 cm., thickness 3 cm. (Nat. Mus. of Costa Rica, No. 7564.)

(c) (Pl. XXXI, Fig. 3.) Club-head of basaltic lava, cylindrical, having four encircling rows of cone-shaped protuberances. Height 5.7 cm., diameter 8.4 cm. (Nat. Mus. of Costa Rica, No. 7708.)

(d) (Pl. XXXI, Fig. 4.) Club-head of white-spotted brown stone, ring-shaped, and provided with an encircling incision near the top. Height 4.6 cm., diameter 7 cm. (Cat. No. $\frac{2438}{264}$.)

(e) (Pl. XXXI, Fig. 5.) Club-head of gray serpentine (?), ring-shaped. Height 4. cm., diameter 7.4 cm. (Cat. No. $\frac{2438}{271}$.)

(f) (Pl. XXXI, Fig. 6.) Club-head, ring-shaped. Height 5.1 cm., diameter 8 cm. (Nat. Mus. of Costa Rica, No. 8946.)

(g) (Pl. XXXI, Fig. 7.) Club-head, ring-shaped, of brownish stone. Height 2.8 cm., diameter 6.3 cm. (Cat. No. $\frac{2939}{243}$.)

(h) (Pl. XXXI, Fig. 8.) Club-head, ring-shaped, of gypsum. Height 2.9 cm., diameter 6.5 cm. (Cat. No. $\frac{2438}{270}$.)

(i) (Pl. XXXI, Fig. 9.) Club-head, ring-shaped, of basaltic lava. Height 3.1 cm., diameter 7.1 cm. (Cat. No. $\frac{2438}{273}$.)

h. Amulets.

Under this term are included a large number of small, polished, ornamental stones of various shapes and colors, all pierced by holes, indicating that they were worn suspended on the body. As is well known, and is fully shown by the Maya and Mexican codices, monuments, and antiquities, it was the custom of the natives of Central America and Mexico to carry artistically sculptured stones as amulets or fetishes for protection against diseases or other evil influences.

In the writings of the early Spanish historians much valuable information is given about the use of ornaments or amulets of precious stones amongst the ancient Mexicans. A resumé of the subject has been given by Squier,¹⁷ which is here reproduced in its essentials.

"Amongst the articles of ornament used by the aboriginal inhabitants of Mexico and Central America, those worked from some variety of green stone resembling emerald, and called by the Nahuatl or Mexican name *chalchiuitl*, *chalchihuite*, or *chalchiuite*, were most highly esteemed, and oftenest mentioned by the early explorers and chroniclers. The word *chalchiuitl* is defined by Molina, in his 'Vocabulario Mexicana' (1571), to signify 'esmeralda baja,' or an inferior kind of emerald. The precious emerald, or emerald proper, was called *quetzalitzli*, from the *quetzal*, the bird known to science as *Trogon resplendens* (the plumes of which, of brilliant metal-

¹⁷Squier, E. G. "Observations on a Collection of Chalchiuitls from Mexico and Central America." From the *Annals of the Lyceum of Natural History of New York*, 1869. Reproduced in the *American Naturalist*, Salem, Mass., 1871, p. 171.

lie green, were worn by the kings of Mexico and Central America as regal insignia), and *itzli*, stone, *i. e.*, the stone of the quetzal.

"Sahagun mentions four of the Mexican gods who were the especial patrons of the lapidaries, and honored as the inventors of the art 'of working stones and chalchiuites, and of drilling and polishing them.' He does not, however, describe the process made use of by the Indians in cutting precious stones, 'because,' he says, 'it is so common and well understood'; an omission which his editor, Bustamente, regrets, 'since the art is now entirely lost.'

"Quetzalcoatl, the lawgiver, high-priest, and instructor of the Mexicans in the arts, is said to have taught not only the working of metals, but 'particularly the art of cutting precious stones, such as chalchiuites, which are green stones, much esteemed, and of great value.' (Torquemada, lib. VI, cap. XXIV.) Quetzalcoatl himself according to certain traditions was begotten by one of these stones, which the goddess Chimalma had placed in her bosom. Indeed both among the Mexicans and the nations farther to the southward the chalchihuitl seems to have represented everything that was excellent in its kind. Its name was used in compounding designations of distinction and honor, and was applied both to heroes and divinities. The goddess of water bore the name *Chalchiuitlecuye*, the woman of the Chalchiuites; and the name of *Chalchiuhapan* was often applied to the city of Tlaxcalla, from a beautiful fountain of water near it, the color of which, according to Torquemada, 'was between blue and green.' Cortez, according to the same authority, was often called 'Chalchiuitl,' which is the same as captain of great valor, because chalchiuitl is the color of emerald, and the emeralds are held in high estimation among the nations. (Monarchia Indiana, Vol. I, p. 435.) When a great dignitary died his corpse was richly decorated for burial with gold and plumes of feathers, and 'they put in his mouth a fine stone resembling emerald, which they call chalchihuitl, and which, they say, they place as a heart.' (Ib., Vol. II, p. 521.)

"Sahagun, in one place describes the chalchihuitl as 'a jasper of very green color, or a common emerald.' Elsewhere he goes into a very full description of the various kinds of green stones which the Mexicans held in esteem, and as his account may materially aid in identifying the chalchihuitl, it is subjoined entire:

"'The emerald which the Mexicans call *quetzalitzli* is precious, of great value, and is so called because by the word *quetzalli* they mean to say a very green plume, and by *itzli*, flint. It is smooth, without spot; and these peculiarities belong to the good emerald; namely, it is deep green with a polished surface, without stain, transparent, and at the same time lustrous. There is another kind of stone which is called *quetzalchalchihuitl*, so called because it is very green and resembles the chal-

chiuitl; the best of these are of deep green, transparent, and without spot; those which are of inferior quality have veins and spots intermingled. The Mexicans work these stones into various shapes: some are round and pierced, others long, cylindrical, and pierced; others triangular, hexagonal, or square. There are still other stones called chalchiuites, which are green (but not transparent), mixed with white; they are much used by the chiefs, who wear them fastened to their wrists by cords, as a sign of rank. The lower orders (*maceguals*) are not allowed to wear them. . . . There is yet another stone called *tlilaiotic*, a kind of chalchuite, in color black and green mixed. And among the jaspers is a variety in color white mixed with green, and for this reason called *iztacchalchiuitl*. Another variety has veins of clear green or blue, with other colors interspersed with the white. . . . And there is yet another kind of green stone which resembles the chalchiuites, and called *xoxouhquitecpatl*. It is known to the lapidaries as *tecelic*, for this reason that it is very easy to work, and has spots of clear blue. The wrought and curious stones which the natives wear attached to their wrists, whether of crystal or other precious stones, they call *chopilottl*—a designation that is given to any stone curiously worked or very beautiful.’ The same author, describing the ornaments which the Mexican lords used in their festivals, speaks of ‘a head-dress called *quetzalalpitoai*, consisting of two tassels of rich plumes, set in gold, and worn suspended from the hair at the crown of the head, and hanging down on each side towards the shoulders. They also wear rings of gold around the arms and in their ears, and round their wrists a broad band of black leather, and suspended to this a large bead of chalchiuitl or other precious stone. They also wear a chin ornament (*barbote*) of chalchiuitl set in gold, fixed in the beard. Some of these barbotes are large crystals, with blue feathers put in them, which gives them the appearance of sapphires. There are many other varieties of precious stones which they use for barbotes. They have their lower lips slit, and wear these ornaments in the openings, where they appear as if coming out of the flesh; and they wear in the same way semilunes of gold. The noses of the great lords are also pierced, and in the openings they wear fine turquoises or other precious stones, one on each side. They wear strings of precious stones around their necks, sustaining a gold medal set around with pearls, and having in its center a smooth precious stone.’ ”

In Porto Rico according to ancient writers, quoted by Dr. J. W. Fewkes in his interesting and instructive essays¹⁸: “small sculptured stone images were worn about the forehead of the aborigines when they went to battle,” but, as Dr. Fewkes presumes, “they were probably worn also on other parts of the body.”

¹⁸ Fewkes, J. W. “Precolumbian West Indian Amulets.” *American Anthropologist*, N. S., 1903, Vol. 5, p. 679.

The only source of information as to the manner in which amulets were worn by the natives of Nicoya is found in the representations of human figures on objects of clay or stone from the burial-grounds. Only a very small number of these human effigies, however, are thus adorned. There are some clay figures from various localities near the pueblo of Nicoya which have necklaces and on the breast a pendant.

The use of large round ear-ornaments is also illustrated by figures of clay.

Of all the objects found in the burial-ground of Las Guacas none are more numerous than the amulets. Several thousand specimens have been unearthed. The commonest are those which have the shape of a celt or a grooved axe, which has been divided lengthwise, the convex side serving as the front.

As a rule the specimens of various forms of amulets show at most only insignificant signs of wear, proving that they were strung and fastened in such a way that hardly any wear could take place. The absence of signs of wear is also explained by the facts that the amulets were mostly made of very hard stones and were not used for more than one generation, being apparently always interred with the owner at his death.

The following classification has been adopted for the supposed amulets and other small objects of stone which were worn on the body or dress:

1. CELT-SHAPED AMULETS.

A. *Worn in vertical position.*

- (a) Designs anthropomorphic.
- (b) Designs ornithomorphic.
- (c) Plain.

B. *Worn in horizontal position.*

- (a) Designs of alligators or fishes.
- (b) Plain.

2. FIGURINES SCULPTURED IN THE ROUND.

- (a) Human figurines and heads.
- (b) Mammalian figurines and heads.
- (c) Bird-shaped figurines and heads.
- (d) Various animals of the lower orders.

3. TUBES.

4. BEADS.

5. VARIOUS SMALL OBJECTS WITHOUT ANY BIOMORPHIC FEATURES.

A number of amulets and other small stone ornaments, etc., from Las Guacas are figured on Pls. XXXII-XLV, and short descriptions of them are given in the following pages.

1. *Celt-shaped Amulets.*

Amulets of this form are by far the most numerous at Las Guacas. A large portion of them retain the shape of a divided, typical celt of this locality, the anterior side of these amulets being more or less convex, the posterior flat. Many specimens of this group are provided with a groove at each edge near the upper end and thus take the shape of an ax. Many others are narrow, rectangular, and often very slender. Of these numerous specimens have even the anterior side flat, or nearly so.

Most of the amulets are plain, but a very large number have the front adorned with anthropomorphic or zoöomorphic designs, often reduced to simple geometrical patterns. As a rule this ornamentation is limited to the upper half of the front of the amulet, which generally shows only the head and upper portion of the body of a man or bird, while the lower half of the amulet, representing the portion below the abdomen, is plain and usually cut quite thin, forming the "blade" of the tool.

While much effort was expended on sculpturing and polishing these small objects, it is worthy of notice that in many cases very little attention was paid to finishing the back. The central ridge along the back, which was left when the specimen was produced by sawing into the stone from opposite sides and then breaking away the ornamented part from the block, although conspicuously rough, is in many cases retained. In other specimens this ridge was ground down and entirely removed.

The process of making the celt-shaped amulets is plainly illustrated by two pieces of jade found in the burial-ground. Pl. XXXII, Figs. 1, 2, shows an oblong core or block of green stone found by me at Las Guacas, from which amulets had been cut. Along the longer side of this interesting specimen the ridge left after an amulet had been split is seen and on the top an elliptical base of another amulet which had been removed is distinguishable. Pl. XXXII, Figs. 3, 4, shows a large water-worn jade pebble from the Velasco collection. On the side which had been cut flat a ridge running along the middle is left, while on the rounded opposite side a straight groove or saw-cut has been made.

The amulets have holes drilled into them for the cords by which they were suspended. In many specimens, which have been drilled from the face, only a single hole near the upper end is found, in other cases there are two such holes. In most cases only a single hole has been drilled through from the side parallel to the flattened surfaces of the amulet.

Some of the celt-shaped amulets, plain as well as sculptured, were cut in two lengthwise. A few such twice divided specimens are illustrated on Pl. XXXIV, Figs. 10, 11, 12, 17; Pl. XXXVII, Figs. 9, 10, 11, 17; and Pl. XXXVIII, Figs. 4, 5.

This was observed long ago by Professor F. W. Putnam in the case of celt-shaped amulets from Nicaragua, and is referred to by Mrs. Zelia Nuttall¹⁹, who says: "In the Peabody Museum there are several specimens of jade celts collected by Dr. Earl Flint in Nicaragua which have been cut into two or more pieces. Professor Putnam had the satisfaction of discovering that these pieces from different graves fitted together. His inference is that the stones must have been rare and highly prized, probably from some motive connected with native ritual."

Although celt-shaped stone amulets have been found in various localities on the American continent, it seems that the aborigines nowhere else used this symbolic object so extensively as in Nicoya.

A. *Celts Worn in a Vertical Position.*

a. *Anthropomorphic Celt-shaped Amulets.*

These are by far the most numerous of the sculptured celts. Roughly estimated about three times as many have been found of this class as of the zöomorphic.

The human figure of the celts, except in a comparatively few specimens, is represented with the head 'en face' and with the arms and upper half of the body delineated. The head is disproportionately large, and, being usually adorned with a head-dress, occupies a considerable portion of the upper half of the celt. Often the lower part of the face, including the nose, is represented enclosed by a square incision, having its upper corner at the root of the nose, its opposite at the apex of the chin. The eyes are always placed outside of the 'face square' on a line with its upper corner. The chin is in numerous specimens triangular, beak-shaped, prolonged downwardly on the breast. The nose is conspicuously broad, as is also the mouth, which is formed by from one to two or three parallel, horizontal grooves. Each of the corners of the mouth is frequently indicated by a small circular pit. Only very rarely are the teeth delineated by the artist as in Pl. XXXIII, Fig. 2, where in both jaws they are plainly figured, or in Pl. XXXIII, Fig. 9, where they are crudely indicated by a row of short, parallel, vertically placed incisions. The tongue of some of the figures, as those represented on Pl. XXXIII, Fig. 1, and Pl. XXXV, Fig. 6, is shown protruding, and in Pl. XXXIV, Fig. 13, it is also prolonged.

For sculpturing the eye various methods have been chosen by the artist. The commonest mode, as illustrated by Pl. XXXIII, Fig. 1, and Pl. XXXIV, Figs. 1, 3, 4, is simply by making use of two circular drilled pits. A peculiar feature is that

¹⁹Nuttall, Zelia: "The Fundamental Principles of Old and New World Civilizations." Peabody Museum, Cambridge, Mass., 1901, pp. 195-196.

the eye-pits are often united by a linear transverse groove, as in Pl. XXXIII, Figs. 9 and 12, and Pl. XXXIII, Fig. 6. In Pl. XXXIII, Figs. 4 and 5, two circular rings are made with a hollow drill and the core-marks serve as the pupils. In Pl. XXXIII, Figs. 6, 7, and 10, and Pl. XXXIV, Figs. 19 and 20, each of the eyes is formed simply by one to three short, parallel, horizontal grooves, and in Pl. XXXIII, Fig. 3, and Pl. XXXIV, Fig. 5, the pupil is added by means of a circular hole drilled in the center of the groove. Pl. XXXIV, Fig. 2, shows one of the few faces with the curved eyebrows plainly marked.

Most of the figures have the front of the head adorned with a decorated band for keeping up the hair, or they have an elaborate head-dress. The hair-band is prevalently decorated with a herring-bone or criss-cross design. The head-dress usually takes the shape of two opposing more or less conventionalized animal (alligator) heads seen in profile, the body being common. On the celts brought together on Pl. XXXIV, Figs. 1 to 9, the gradual transformation of the two animal heads into two insignificant knobs is demonstrated. Compare also on Pl. XXXVIII the representations of the alligators with their characteristic upturned noses.

Regarding the position of the arms it may be observed that, while the arms from the shoulder to the elbow are always represented as placed parallel to the body, the fore-arms are represented as horizontal, either with the hands meeting on the abdomen or one placed a little above the other, in such a manner that the right hand is seen on the left side and vice versa. In the latter case Dr. Fischer in the work on Costa Rican stone implements above quoted infers that the attitude indicates the peculiar way of reverentially bowing which is customary among certain peoples. Only rarely do the arms cross each other on the breast as in Pl. XXXIII, Fig. 17, Pl. XXXV, Fig. 16, and Pl. XLIII, Fig. 2. In a few cases, as in Pl. XXXIII, Figs. 10 and 12, and Pl. XXXV, Fig. 12, the forearms are held against the breast, and in Pl. XXXIII, Figs. 11 and 13, and Pl. XXXIV, Fig. 8, they are stretched up toward the armpits. In Pl. XXXIII, Fig. 15, there is one of the few exceptional cases representing a man holding the right hand up against the breast, and XXXIII, Figs. 14 and 16, show figures holding the left hand in the same position. In Pl. XXXV, Fig. 13, the almost monkey-like figure seems to grasp some small object in each hand. The fingers are always indicated by straight parallel incised lines. The nipples of the breast are very seldom marked, as is the case in Pl. XXXIII, Fig. 4. None of the figures have the sex indicated.

A circular amulet or ornament for the breast is shown in Fig. 5, on Pl. XXXIII, and a necklace adorns Fig. 6 on the same plate.

There is a small group of anthropomorphic celts upon which are sculptured not

merely the upper half of the human body, but the entire figure. In these specimens, which show the head and arms free and sometimes the legs also, the original outlines of the celt have more or less disappeared. A number of similar partly transformed celts are shown on Pl. XXXV.

In a few cases the anthropomorphic celt is almost triangular in shape, as in Pl. XXXIV, Fig. 18.

The anthropomorphic celts pass over into those of the following group, the ornithomorphic, by a series of intermediate forms, and strict lines can hardly be drawn between the two groups. The head of a bird, when borne by the human figure, undoubtedly represents a mask worn in certain ceremonies. In ancient Mexico it will be recalled that warriors are mentioned as distinguished by wearing bird-masks.

A number of anthropomorphic celts are illustrated on Pls. XXXIII-XXXV:

Celt of gray stone; a human figure with large head-dress and lip ornament. Arms placed horizontally across the breast, the right arm above the left. Length 23.1 cm., breadth 7.1 cm. Pl. XXXIII, Fig. 1. (Cat. No. $\frac{2.939}{315}$.)

Celt of granulite (?); a human figure with large head-dress. Arms as in the above, the right arm above the left. Length 20.5 cm., breadth 6.5 cm. Pl. XXXIII, Fig. 2. (Cat. No. $\frac{2.939}{260}$.)

Celt of serpentine; a human figure, with the hands meeting on the abdomen. Length 19.1 cm., breadth 5.9 cm. Pl. XXXIII, Fig. 3. (Cat. No. $\frac{2.939}{263}$.)

Celt of serpentine (?); a human figure, the left arm above the right resting on the abdomen. Breasts (?) indicated through pair of circular marks. Length 19.8 cm., breadth 3.4 cm. Pl. XXXIII, Fig. 4. (Cat. No. $\frac{2.939}{320}$.)

Celt of serpentine; a human figure with an amulet on the breast. Hands meeting on the abdomen. Length 12.9 cm., breadth 4 cm. Plate XXXIII, Fig. 5. (Nat. Mus. of Costa Rica, No. 7851.)

Celt of serpentine; a human figure adorned with a necklace. Hands meeting on the abdomen. Length 11.8 cm., breadth 3.2 cm. Pl. XXXIII, Fig. 6. (Cat. No. $\frac{2.939}{344}$.)

Celt of Serpentine; a human figure; arms over the abdomen not very plainly marked. Length 9.7 cm., breadth 3.3 cm. Pl. XXXIII, Fig. 7. (Cat. No. $\frac{2.939}{484}$.)

Celt of pale-green bowenite; human figure; arms omitted. Length 7.1 cm. breadth 3.3 cm. Pl. XXXIII, Fig. 8. (Cat. No. $\frac{2.438}{332}$.)

Celt of pale-green bowenite; human figure; arms laid across the breast horizontally; teeth marked. Length 9.1 cm., breadth 5.8 cm. Pl. XXXIII, Fig. 9. (Cat. No. $\frac{2.438}{320}$.)

Celt of serpentine ; human figure ; both arms held up against the breast. Length 12.8 cm., breadth 3 cm. Pl. XXXIII, Fig. 10. (Cat. No. $\frac{2939}{324}$.)

Celt of green stone ; human figure ; arms bent straight up towards the shoulders. Length 12.5 cm., breadth 3 cm. Pl. XXXIII, Fig. 11. (Nat. Mus. of Costa Rica, No. 7805.)

Celt of serpentine ; human figure ; arms held up against the breast. Length 13.2 cm., breadth 4.2 cm. Pl. XXXIII, Fig. 12. (Cat. No. $\frac{2939}{268}$.)

Celt of serpentine ; human figure ; arms flexed toward the shoulders. Length 9 cm., breadth 1.9 cm. Pl. XXXIII, Fig. 13. (Cat. No. $\frac{2939}{355}$.)

Celt of serpentine ; human figure ; right arm flexed against the breast, the left resting on the abdomen. Length 14.3 cm., breadth 3.8 cm. Pl. XXXIII, Fig. 14. (Cat. No. $\frac{2939}{322}$.)

Celt of gypsum ; human figure ; left arm against the breast ; the right arm over the abdomen. Length 15 cm., breadth 3 cm. Pl. XXXIII, Fig. 15. (Cat. No. $\frac{2939}{323}$.)

Celt of gypsum ; human figure ; right arm held against the breast, the left arm over the abdomen. Length 10.1 cm., breadth 3.4 cm. Pl. XXXIII, Fig. 16. From Hartman's excavations at Las Guacas. (Cat. No. $\frac{2793}{128}$.)

Celt of green stone ; human figure ; arms crossing the breast. Length 8.5 cm., breadth 3.4 cm. Pl. XXXIII, Fig. 17. (Nat. Mus. of Costa Rica, No. 7731.)

Celt of serpentine ; human figure, adorned with head-dress. Length 18.9 cm., breadth 3.2 cm. Pl. XXXIV, Fig. 1. (Cat. No. $\frac{2438}{278}$.)

Celt of gray stone ; human figure, adorned with head-dress. Length 15.8 cm., breadth 2.6 cm. Pl. XXXIV, Fig. 2. (Cat. No. $\frac{2428}{281}$.)

Celt of black nephrite ; human figure, adorned with head-dress. Length 13.2 cm., breadth 2.6 cm. Pl. XXXIV, Fig. 3. (Cat. No. $\frac{2939}{314}$.)

Celt of grey stone ; human figure adorned with head-dress. Length 12 cm., breadth 4.1 cm. Pl. XXXIV, Fig. 4. (Cat. No. $\frac{2438}{291}$.)

Celt of gypsum ; human figure, adorned with head-dress. Length 10.2 cm., breadth 3.9 cm. Pl. XXXIV, Fig. 5. (Cat. No. $\frac{2438}{295}$.)

Celt of euphotide ; human figure, adorned with head-dress. Length 8.8 cm., breadth 3.3 cm. Pl. XXXIV, Fig. 6. (Cat. No. $\frac{2438}{296}$.)

Celt of gray stone ; human figure, adorned with head-dress. Length 10 cm., breadth 3.5 cm. Pl. XXXIV, Fig. 7. (Cat. No. $\frac{2936}{349}$.)

Celt of greenish bowenite ; human figure, adorned with head-dress. Length 10.8 cm., breadth 4.6 cm. Pl. XXXIV, Fig. 8. (Cat. No. $\frac{2939}{276}$.)

Celt of green jade ; human figure. The specimen is cut in two from the front

longitudinally, thus quartered. Length 17.4 cm., breadth 2.2 cm. Pl. XXXIV, Fig. 10. (Cat. No. $\frac{2939}{410}$.)

Celt of green jade; human figure. The specimen is cut in two from the front longitudinally. Length 16.1 cm., breadth 2 cm. Pl. XXXIV, Fig. 11. (Cat. No. $\frac{2939}{411}$.)

Celt of blackish stone; human figure with extended tongue (?). Length 11.8 cm., breadth 4.6 cm. Pl. XXXIV, Fig. 13. (Cat. No. $\frac{2939}{277}$.)

Celt of gray stone; human figure, highly conventionalized, with large head-dress. Compare Figs. 1-9 of same plate. Length 6.2 cm., breadth 2.8 cm. Pl. XXXIV, Fig. 15. (Nat. Mus. of Costa Rica, No. 7953.)

Celt of serpentine, plain, with three parallel transverse incised lines near the top. Length 8.5 cm., breadth 4.6 cm. Pl. XXXIV, Fig. 16. (Cat. No. $\frac{3959}{660}$.)

Celt of light green jade, plain, with three parallel transverse incised lines near the top. Length 11.9 cm., breadth 1.6 cm. Pl. XXXIV, Fig. 17. (Cat. No. $\frac{2939}{659}$.)

Celt of grayish stone of rather unusual triangular shape; human figure. Length 10.2 cm., breadth 4.9 cm. Pl. XXXIV, Fig. 18. (Cat. No. $\frac{2438}{368}$.)

Celt of white felsite; human figure. Length 11.2 cm., breadth 2.3 cm. Pl. XXXIV, Fig. 19. (Cat. No. $\frac{2939}{398}$.)

Celt of felsite; human figure. Length 14.7 cm., breadth 2.9 cm. Pl. XXXIV, Fig. 20. (Cat. No. $\frac{2438}{283}$.)

Celt of green bowenite, plain, with a criss-cross banded head ornament near the top. Length 9.9 cm., breadth 3.8 cm. Pl. XXXIV, Fig. 21. (Cat. No. $\frac{2438}{475}$.)

Celt of green jade representing a bear or a human figure. Length 6 cm., breadth 2.7 cm. Pl. XXXV, Fig. 1. (Cat. No. $\frac{2939}{407}$.)

Celt of serpentine; human figure. Length 5.9 cm., breadth 3 cm. Pl. XXXV, Fig. 2. (Cat. No. $\frac{2939}{400}$.)

Celt of gray stone representing a bear or a human figure. Length 6 cm., breadth 2.8 cm. Pl. XXXV, Fig. 3. (Cat. No. $\frac{2939}{405}$.)

Celt of pale green bowenite; human figure. Length 5.6 cm., breadth 1.5 cm. Pl. XXXV, Fig. 4. (Cat. No. $\frac{2939}{404}$.)

Celt of gray stone; human figure. Length 9.9 cm., breadth 3 cm. Pl. XXXV, Fig. 5. (Nat. Mus. of Costa Rica, No. 7831.)

Celt of serpentine; human figure, with tongue thrust out. Length 10.9 cm., breadth 4 cm. Pl. XXXV, Fig. 6. (Cat. No. $\frac{2939}{399}$.)

Human figure of serpentine (?) sculptured in the round. Length 6.1 cm., breadth 2.5 cm. Pl. XXXV, Fig. 7. (Nat. Mus. of Costa Rica, No. 8494.)

Human figure of pale green stone, sculptured in the round. Length 5.8 cm., breadth 3 cm. Pl. XXXV, Fig. 8. (Nat. Mus. of Costa Rica, No. 8489.)

Celt of serpentine(?); human figure highly conventionalized, the head being divided in the middle almost to the same depth as the division between the legs. Length 4.6 cm., breadth 2.5 cm. Pl. XXXV, Fig. 9. (Cat. No. $\frac{2.939}{401}$.)

Celt of serpentine(?); human figure, highly conventionalized. Length 9 cm., breadth 2.7 cm. Pl. XXXV, Fig. 10. (Cat. No. $\frac{2.939}{1173}$.)

Celt of green bowenite; human figure. Broken. Length 8.7 cm., breadth 2.9 cm. Pl. XXXV, Fig. 11. (Cat. No. $\frac{2.939}{414}$.)

Celt of green bowenite(?); human figure with both hands against the chin. Length 9.5 cm., breadth 3.9 cm. Pl. XXXV, Fig. 12. (Cat. No. $\frac{2.939}{284}$.)

Celt of green bowenite, simian figure. Length 3.9 cm., breadth 2.9 cm. Pl. XXXV, Fig. 13. (Cat. No. $\frac{2.939}{416}$.)

Celt of whitish stone; human figure with three longitudinal slits, two serving for separating the arms from the body, the third possibly for marking the sex. Length 9.7 cm., breadth 4.4 cm. Pl. XXXV, Fig. 14. (Nat. Mus. of Costa Rica, No. 7834.)

Fig. 16. Celt of serpentine(?); human figure with arms crossed on breast, Length 6.7 cm., breadth 2.2 cm. Pl. XXXV, Fig. 16. (Cat. No. $\frac{2.939}{311}$.)

Celt of whitish stone; monkey-like figure with broad snout and in sitting position. Length 6.8 cm., breadth 2 cm. Pl. XXXV, Fig. 17. (Nat. Mus. of Costa Rica, No. 8488.)

Celt of green jade; human(?) figure. Length 6.8 cm., breadth 3.1 cm. Pl. XXXV, Fig. 24. (Cat. No. $\frac{2.939}{301}$.)

(b) *Ornithomorphic Celt-shaped Amulets.*

This group, although well represented in numbers at Las Guacas, is comparatively smaller than the former. Only parrots, and in a smaller number of instances owls, appear to be embodied in the celt-shaped amulets. As is the case with the bird-shaped banner-stones, intermediate forms occur here also.

Bird-celts may be arranged in two large groups, according to their general shape. The first group resembles in general shape the common type of anthropomorphic celts, being apparently parted, rather thin, with the upper half of the front slightly convex, the lower half flat, the back also flat, usually with the ridge left in cutting still remaining and not polished away. Typical specimens are illustrated on Pl. XXXV, Figs. 19, 20, 21, and 25. In the second and largest group, apparently no partition of the original celt has taken place, the whole back being more or less con-

vex, while the convex upper half of the front shows in high relief the head and wings of the bird, and the lower half is cut flat and thin and is devoid of ornamentation. (Compare the figures on Pl. XXXVI.) The latter type in many specimens takes the form of a grooved ax, the head of the bird serving as the head of the ax, the neck representing the grooved part, and the lower half of the body forming the blade, which often broadens out toward the edge. In the more highly conventionalized forms of similar celts the bird-like features gradually disappear. In a number of these small amulets all avian features have been dropped, and only a plain grooved ax is left. Pl. XXXVI shows a number of the transitional forms. The crests and ear-tufts of the bird are generally emphasized by the artist. An incised band at the front of the head, similar to the head-band of the human figure, is frequently seen, and some birds are adorned with high head-dresses resembling those on the anthropomorphic celts. In some figures, as those represented on Pl. XXXV, Figs. 19, 21, 22, and 25, the feathers of the wings are delineated, and a few specimens, as those on Pl. XXXV, Figs. 21 and 25, even show the legs and the feet. As most of the bird-celts are more or less convex and rather thick, the hole for suspension is nearly always drilled from the side; only in a few very thin specimens which could not be pierced in this way, are two circular holes drilled in from the front.

In a certain portion of the ornithomorphic celts (only rarely in the anthropomorphic), the figure, instead of appearing as seen 'en face' is sculptured in profile, with the head cut out usually on the left, but in some cases on the right side. On Pl. XXXVII are shown a number of specimens of the latter class, ranging from examples in which all the details of the body are brought out to such as represent the most conventionalized and simplified forms. Two similar figures are also shown on Pl. XLIV, Figs. 2 and 4.

The zoölogical identification of conventionalized animal forms is often a puzzling task, particularly when the investigator does not have at his disposition large series of all the animal forms represented in art by the people or culture under study. Even then it frequently is impossible in certain cases to make exact determinations, owing to the fact that in art different animals have been given purely fantastic characters, and hybrid forms of animals, or of man with animals occur. To draw conclusions from a small number of specimens in consequence becomes a risky undertaking. A wide field for speculation is always open to the student who tries such an experiment. In Dr.



FIG. 70. Bird-shaped celt, wrongly identified as a whale by Dr. H. Fischer.

H. Fischer's work on Costa Rican artefacts of stone, referred to above, one of the ornithomorphic celts, reproduced in Fig. 70 and representing a highly conventionalized parrot, or other crested bird, (Compare Pl. XXXVII, and Pl. I, Fig. 6), has been placed in an horizontal position, and then identified as that of a whale.

A number of ornithomorphic celts are briefly described in the following paragraphs:

Bird-like celt of dark green bowenite. Length 10.4 cm., breadth 2.6 cm. Pl. XXXV, Fig. 15. (Cat. No. $\frac{2939}{300}$.)

Celt having the shape of a parrot, made of serpentine, sculptured in the round. Length 6 cm., breadth 2.2 cm. Pl. XXXV, Fig. 18. (Cat. No. $\frac{2939}{575}$.)

Ornithomorphic celt of unusual form, made of quartz(?). Length 5.1 cm., breadth 3.3 cm. Pl. XXXV, Fig. 19. Cat. No. $\frac{2438}{450}$.)

Celt made of bowenite, having the figure of a bird, adorned with a necklace. Length 5.2 cm., breadth 1.8 cm. Pl. XXXV, Fig. 20. (Cat. No. $\frac{2939}{553}$.)

Bird-like celt of gray stone. Length 12.7 cm., breadth 4.1 cm. Pl. XXXV, Fig. 21. (Cat. No. $\frac{2939}{442}$.)

Bird-like celt of serpentine. Length 5.5 cm., breadth 2.4 cm. Pl. XXXV, Fig. 22. (Cat. No. $\frac{2939}{576}$.)

Bird-like celt of bluish-green jade. Length 5.5 cm., breadth 2.3 cm. Pl. XXXV, Fig. 23. (Cat. No. $\frac{2939}{555}$.)

Celt of bluish-green jade(?) having the form of a bird. Length 7.3 cm., breadth 3.8 cm. Pl. XXXV, Fig. 25. (Cat. No. $\frac{2939}{532}$.)

Celt of white felsite, parrot-like, with two heads, one above the other. Length 14.9 cm., breadth 3 cm. Pl. XXXVI, Fig. 1 (side view); Fig. 2 (front view). (Cat. No. $\frac{2939}{440}$.)

Celt of quartz(?), parrot-like. Length 15 cm., breadth 5 cm. Pl. XXXVI, Fig. 3. (Cat. No. $\frac{2939}{441}$.)

Celt of dark-green mottled jade, parrot-like. Length 14.8 cm., breadth 3.2 cm. Pl. XXXVI, Fig. 4. (Nat. Mus. of Costa Rica, No. 7853.)

Celt of serpentine possibly representing an owl. Length 6.6 cm., breadth 3.2 cm. Pl. XXXVI, Fig. 5. (Cat. No. $\frac{2929}{453}$.)

Bird-like celt of green bowenite. Length 14.9 cm., breadth 2.6 cm. Pl. XXXVI, Fig. 6. (Cat. No. $\frac{3438}{440}$.)

Celt of serpentine, bird-like, double-headed, conventionalized. Length 14 cm., breadth 2.4 cm. Pl. XXXVI, Fig. 7. (Cat. No. $\frac{2438}{441}$.)

Bird-like celt of light green mottled jade (parrot). Length 12.2 cm., breadth 2.4 cm. Pl. XXXVI, Fig. 8. (Nat. Mus. of Costa Rica, No. 7745.)

Bird-like celt of serpentine, conventionalized. Length 11.4 cm., breadth 1.8 cm. Pl. XXXVI, Fig. 9. (Cat. No. $\frac{2939}{458}$.)

Bird-like celt of gypsum (owl). Length 12.5 cm., breadth 3.7 cm. Pl. XXXVI, Fig. 10. (Cat. No. $\frac{2438}{404}$.)

Celt of whitish stone representing an owl. Length 10 cm., breadth 4 cm. Pl. XXXVI, Fig. 11. (Nat. Mus. of Costa Rica, No. 3329.)

Celt of grayish stone, representing an owl. Compare ornamentation of head with Pl. XXXIV, Figs. 1-8. Length 9.4 cm., breadth 3.8 cm. Pl. XXXVI, Fig. 12. (Nat. Mus. of Costa Rica, No. 7826.)

Owl-like celt of white stone. Compare ornament of head with Pl. XXXIV, Figs. 1-8. Length 7.8 cm., breadth 2.8 cm. Pl. XXXVI, Fig. 13. (Nat. Mus. of Costa Rica, No. 10679.)

Owl-like celt of blackish-green jade. Length 5.5 cm., breadth 3.1 cm. Pl. XXXVI, Fig. 14. (Nat. Mus. of Costa Rica, No. 7817.)

Celt of serpentine. Length 11.3 cm., breadth 4 cm. Pl. XXXVI, Fig. 15. (Cat. No. $\frac{2438}{437}$.)

Celt of serpentine (?). Length 10.2 cm., breadth 5.1 cm. Pl. XXXVI, Fig. 16. (Cat. No. $\frac{2939}{448}$.)

Celt of gypsum. Length 10.5 cm., breadth 4.3 cm. Pl. XXXVI, Fig. 17. (Cat. No. $\frac{2438}{436}$.)

Parrot-like celt of gray stone with button-like protuberance on the forehead. Length 9.2 cm., breadth 3.7 cm. Pl. XXXVI, Fig. 18. (Cat. No. $\frac{2939}{446}$.)

Parrot-like celt of stone, conventionalized. Length 9.8 cm., breadth 2.6 cm. Pl. XXXVI, Fig. 19. (Nat. Mus. of Costa Rica, No. 7752.)

Bird-like celt of stone, conventionalized. Length 5 cm., breadth 2 cm. Pl. XXXVI, Fig. 20. (Nat. Mus. of Costa Rica.)

Celt of stone, conventionalized bird. Length 10.4 cm., breadth 4.1 cm. Pl. XXXVI, Fig. 21. (Nat. Mus. of Costa Rica.)

Ornithomorphic celt of stone, conventionalized. Length 4.1 cm., breadth 1.7 cm. Pl. XXXVI, Fig. 22. (Nat. Mus. of Costa Rica.)

Ornithomorphic celt of stone, conventionalized. Length 7.1 cm., breadth 5 cm. Pl. XXXVI, Fig. 23. (Nat. Mus. of Costa Rica, No. 8145.)

Ornithomorphic celt of stone, conventionalized. Length 4.6 cm., breadth 2.1 cm. Pl. XXXVI, Fig. 24. (Nat. Mus. of Costa Rica, No. 8170.)

Bird-like celt of serpentine, conventionalized. Length 5.1 cm., breadth 2.1 cm. Pl. XXXVI, Fig. 25. (Cat. No. $\frac{2793}{125}$.)

Ornithomorphic celt of pale green bowenite. Length 11.1 cm., breadth 5.3 cm. Pl. XXXVI, Fig. 26. (Cat. No. $\frac{2438}{435}$.)

Parrot-like celt of green jade. Length 7 cm., breadth 2.1 cm. Pl. XXXVII, Fig. 1. (Cat. No. $\frac{2939}{579}$.)

Bird-like celt of stone (parrot). Length 6.1 cm., breadth 2.2 cm. Pl. XXXVII, Fig. 2. (Nat. Mus. of Costa Rica.)

Parrot-like celt of stone. Length 5 cm., breadth 1.9 cm. Pl. XXXVII, Fig. 3. (Nat. Mus. of Costa Rica.)

Bird-like celt of serpentine. Length 6.3 cm., breadth 1.6 cm. Pl. XXXVII, Fig. 4. (Cat. No. $\frac{2939}{600}$.)

Bird-like celt of serpentine (?). Length 9.8 cm., breadth 2.3 cm. Pl. XXXVII, Fig. 5. (Cat. No. $\frac{2939}{484}$.)

Bird-like celt of gypsum. Length 10.8 cm., breadth 2 cm. Pl. XXXVII, Fig. 6. (Cat. No. $\frac{2939}{615}$.)

Bird-like celt of serpentine. Length 7.4 cm., breadth 1.3 cm. Pl. XXXVII, Fig. 7. (Cat. No. $\frac{2939}{609}$.)

Bird-like celt of gypsum. Length 12.1 cm., breadth 1.9 cm. Pl. XXXVII, Fig. 8. (Cat. No. $\frac{2438}{481}$.)

Highly conventionalized celt of green jade. Length 9.3 cm., breadth 2.1 cm. Pl. XXXVII, Fig. 9. (Cat. No. $\frac{2939}{627}$.)

Celt of serpentine, highly conventionalized bird, with a transverse incision near the upper end. Length 10.7 cm., breadth 1.7 cm. Pl. XXXVII, Fig. 10, (Cat. No. $\frac{2939}{680}$.)

Celt of jade, highly conventionalized bird. Length 8 cm., breadth 2.5 cm. Pl. XXXVII, Fig. 11. (Cat. No. $\frac{2939}{630}$.)

Celt of green jade, conventionalized bird. Length 15 cm., breadth 2.3 cm. Pl. XXXVII, Fig. 20. (Cat. No. $\frac{2939}{593}$.)

Bird-like celt of whitish stone. Length 8.3 cm., breadth 3.4 cm. Pl. XXXVII, Fig. 21. (Cat. No. $\frac{2939}{594}$.)

Bird-like celt of quartz (?). Length 11.7 cm., breadth 2.5 cm. Pl. XXXVII, Fig. 22. (Cat. No. $\frac{2939}{602}$.)

Bird-like celt of green bowenite, ax-shaped, the blade broad with a quadrangular incision on the neck. Length 6.2 cm., breadth 6 cm. Pl. XXXVII, Fig. 22. (Cat. No. $\frac{2438}{476}$.)

(c) *Plain Celt-shaped Amulets.*

These are less numerous than the sculptured. Nearly all the plain amulets have only one hole for suspension. Only some of the very largest as Pl. XXXVII, Fig. 12, are provided with two holes. The following specimens are typical of this group.

Celt of bluish green jade, showing back with the central ridge left in cutting. Length 20.2 cm., breadth 6.9 cm. Pl. XXXVII, Fig. 12. (Cat. No. $\frac{2939}{890}$.)

Celt of greenish granulite, showing back with the central ridge, left in cutting, ground down. Length 15.4 cm., breadth 2.3 cm. Pl. XXXVII, Fig. 13. (Cat. No. $\frac{2939}{900}$.)

Celt of green jade. Length 14.3 cm., breadth 2.3 cm. Pl. XXXVII, Fig. 14. (Cat. No. $\frac{2939}{896}$.)

Celt of quartz (?). Length 7.8 cm., breadth 2.3 cm. Pl. XXXVII, Fig. 15. (Cat. No. $\frac{2939}{763}$.)

Celt of green jade. Length 14.1 cm., breadth 2.5 cm. Pl. XXXVII, Fig. 16. (Cat. No. $\frac{2939}{894}$.)

Celt of mottled greenish stone. Length 7.5 cm., breadth 2 cm. Pl. XXXVII, Fig. 17. (Cat. No. $\frac{2939}{941}$.)

Celt of serpentine. Length 10.5 cm., breadth 3.6 cm. Pl. XXXVII, Fig. 18. (Cat. No. $\frac{2939}{721}$.)

Celt of mottled greenish stone. Length 8.3 cm., breadth 2.1 cm. Pl. XXXVII, Fig. 19. (Cat. No. $\frac{2939}{950}$.)

Celt of serpentine. Length 5.8 cm., breadth 3.1 cm. Pl. XXXVII, Fig. 23. (Cat. No. $\frac{2939}{861}$.)

Celt of serpentine. Length 5.7 cm., breadth 3.4 cm. Pl. XXXVII, Fig. 24. (Cat. No. $\frac{2438}{568}$.)

Celt of whitish green jade cut in two from the front longitudinally. Length 18.2 cm., breadth 3.8 cm. Pl. XXXIV, Fig. 12. (Cat. No. $\frac{2939}{628}$.)

Celt, triangular, of mottled dark green jadeite. Length 6.2 cm., breadth 3.4 cm. Pl. XXXIV, Fig. 7. (Cat. No. $\frac{2939}{349}$.)

Celt of pale green, translucent jadeite. Length 7.5 cm., breadth 1.9 cm. Pl. XXXIV, Fig. 8. (Cat. No. $\frac{2939}{276}$.)

Celt of pale green, translucent jadeite. Length 9.1 cm., breadth 1.4 cm. Pl. XXXIV, Fig. 9. (Cat. No. $\frac{2939}{1625}$.)

B. WORN IN HORIZONTAL POSITION.

(a) *Designs of Alligators or Fishes.*

A small number of the celt-shaped oblong, rectangular amulets have been provided with two or more circular holes along the upper side for suspension in a horizontal position. Most of these objects are thin and flat on both sides, but some show the upper side convex. Most of the objects represent alligators with a head with upturned snout seen in profile at each end, the body being in common. Only

two specimens, Pl. XXXVIII, Figs. 8 and 10, have come under my observation, representing a fish as plainly shown both by the shape of the head and body and by the fins.

The following specimens illustrate the forms above described.

Anterior half of alligator of serpentine. Length 13.1 cm., breadth 2.3 cm. Pl. XXXVIII, Fig. 1. (Cat. No. $\frac{2939}{1157}$.)

Alligator of quartz. Length 11.5 cm., breadth 2.5 cm. Pl. XXXVIII, Fig. 2. (Cat. No. $\frac{2939}{1155}$.)

Alligator head, body missing, of mottled, whitish yellow stone. Length 6.9 cm., breadth 2.4 cm. Pl. XXXVIII, Fig. 3. (Cat. No. $\frac{2939}{1152}$.)

Alligator of pale green bowenite(?). Length 14.2 cm., breadth 2.4 cm. Pl. XXXVIII, Fig. 4. (Cat. No. $\frac{2939}{1154}$.)

Alligator of pale green bowenite. Front side slightly convex, back flat. Length 19.5 cm., breadth 3 cm. Pl. XXXVIII, Fig. 5. (Cat. No. $\frac{2438}{828}$.)

Head of alligator of green stone, highly conventionalized. Length 7.5 cm., breadth 2.2 cm. Pl. XXXVIII, Fig. 6. (Cat. No. $\frac{2939}{1162}$.)

Alligator of gray stone. Length 14.7, breadth 2 cm. Pl. XXXVIII, Fig. 7. (Nat. Mus. of Costa Rica, No. 7858.)

Fish of stone. Length 10.2 cm., breadth 4.1 cm. Pl. XXXVIII, Fig. 8. (Nat. Mus. of Costa Rica, No. 7712.)

Anterior half of alligator, serpentine. Length 8.8 cm., breadth 1.9 cm. Pl. XXXVIII, Fig. 9. (Cat. No. $\frac{2939}{1160}$.)

Fish of pale green bowenite, tail missing. Length 11.5 cm., breadth 4 cm. Pl. XXXVIII, Fig. 10. (Cat. No. $\frac{2939}{1161}$.)

Alligator(?) of gypsum, highly conventionalized. Length 11.9 cm., breadth 2.5 cm. Pl. XXXVIII, Fig. 11. (Cat. No. $\frac{2939}{1156}$.)

Alligator head of mottled, whitish yellow stone. Length 12.7 cm., breadth 2.2 cm. Pl. XXXVIII, Fig. 13. (Cat. No. $\frac{2939}{1153}$.)

Anterior half of alligator, serpentine. Length 19.6 cm., breadth 2.9 cm. Pl. XXXVIII, Fig. 16. (Cat. No. $\frac{2939}{1158}$.)

(b) *Plain or with Simple Band Designs.*

A few specimens of this rather sparingly represented group are illustrated on Pl. XXXVIII. Of this group, Figs. 14, 17, 18 show plain specimens, and Figs. 12, 15 and Pl. XXXVII, Fig. 27, some with vertical incised bands.

Plain amulet of greenish bowenite, adorned with two transverse, elevated, incised bands. Length 10.3 cm., breadth 3.7 cm. Pl. XXXVIII, Fig. 12. (Cat. No. $\frac{2939}{1163}$.)

Plain amulet of bluish jade. Length 11.9 cm., breadth 2.2 cm. Pl. XXXVIII, Fig. 14. (Cat. No. $\frac{2939}{1159}$.)

Plain amulet of dark green bowenite, with an incised band at each end. Length 10 cm., breadth 2.9 cm. Pl. XXXVIII, Fig. 15. (Cat. No. $\frac{2438}{831}$.)

Plain amulet of bluish green jade (?). Length 8.4 cm., breadth 3.4 cm. Pl. XXXVIII, Fig. 17. (Cat. No. $\frac{2939}{1168}$.)

Plain amulet of mottled blackish green stone. Length 6.5 cm., breadth 3 cm. Pl. XXXVIII, Fig. 18. (Cat. No. $\frac{2939}{1169}$.)

Amulet of serpentine worn in horizontal position, adorned with an incised transverse band at each end. Length 4.9 cm., breadth 3.9 cm. Pl. XXXVII, Fig. 27, (Cat. No. $\frac{2939}{1164}$.)

2. FIGURINES SCULPTURED IN THE ROUND.

(a) *Human Figurines and Heads.*

Of the human figurines or statuettes found at Las Guacas, which represent entire human figures, there are hardly any which do not more or less plainly betray their derivation from the celt-shaped amulets. They have therefore been classified in the above with that class of objects and are illustrated on Pl. XXXV, Figs. 7, 8. Of human heads in stone there are, however, a small number of diminutive forms encountered here, all provided with holes for suspension, which, not being celt-shaped, have to be grouped apart. Some of these perhaps owe their existence to the celt manufacture, having been made out of chips of the precious stone celts. A number of these human heads are illustrated on the plates.

Human head of pale green bowenite with a transverse boring at the neck for suspension. Height 2.6 cm., breadth 2 cm. Pl. XXXIX, Fig. 1. (Nat. Mus. of Costa Rica, No. 8406.)

Human head of dark green jade with an angular tattoo-mark extending over each cheek to the nose. Height 2.8 cm., breadth 2.3 cm. Pl. XXXIX, Fig. 2. (Nat. Mus. of Costa Rica, No. 8406.)

Human head of pale green stone with flat skull. Height 2.3 cm., breadth 1.3 cm. Pl. XXXIX, Fig. 3. (Cat. No. $\frac{2438}{874}$.)

Human head of white stone, features partly obliterated. Height 2.2 cm., breadth 1.4 cm. Pl. XXXIX, Fig. 4. (Cat. No. $\frac{2438}{876}$.)

Human head of white gypsum with prolonged chin and head-dress. Height 6.6 cm., breadth 2.8 cm. Pl. XXXIX, Fig. 5. (Cat. No. $\frac{2939}{1262}$.)

Human head crudely executed, of greenish stone. Height 2.1 cm., breadth 1.5 cm. Pl. XXXIX, Fig. 6. (Cat. No. $\frac{2939}{1265}$.)

Human head of pale green bowenite with an incision around its front. Height 2.7 cm., breadth 1.8 cm. Pl. XXXIX, Fig. 7. (Cat. No. $\frac{2939}{1266}$.)

Human head of gray stone with a peculiar head-dress. Height 3.3 cm., breadth 2.5 cm. Pl. XXXIX, Fig. 8. (Cat. No. $\frac{2939}{1276}$.)

Oblong, flat bead-shaped amulet of pale green stone with a human face carved on either side. Fig. 12 shows a face with open and Fig. 13 a face with closed eyes. Length 3.5 cm., breadth 2.4 cm. Pl. XXXIX, Figs. 12, 13. (Cat. No. $\frac{2939}{1276}$.)

Human head of quartz, features partly obliterated. Height 2.9 cm., breadth 2.1 cm. Pl. XXXIX, Fig. 15. (Cat. No. $\frac{2438}{876}$.)

Human head of pale green stone with very elaborate head-dress, ear and breast ornaments. Height 5.5 cm., breadth 4.3 cm. Pl. XXXIX, Fig. 19. (Nat. Mus. of Costa Rica.)

(b) *Animal Figurines and Heads.*

Of the mammalia only two groups seem to be represented in any numbers. The one contains the animal, always represented with a large, erect tail and described and figured on page 26 from my own excavations at Las Guacas. The other group consists of bats. Pl. XL, Figs. 1-17 and Pl. XLI, Figs. 1-9, show some representations of the unidentified animal (the ant-bear?) with the erect tail. Pl. XLIV, Figs. 6, 7, illustrates variants of the bat. Other mammal types are very rare.

Unknown animal (ant-bear?) with broad tail, of gray bowenite. Height 1.9 cm., length 5.1 cm. Pl. XL, Fig. 1. (Cat. No. $\frac{2939}{1220}$.)

Animal of green bowenite, with tail turned upwards. Height 2.6 cm., length 4 cm. Pl. XL, Fig. 2. (Cat. No. $\frac{2939}{1209}$.)

Animal of stone. Height 3.8 cm., length 5.2 cm. Pl. XL, Fig. 3. (Nat. Mus. of Costa Rica, No. 3388.)

Animal of stone. Height 3.5 cm., length 4.2 cm. Pl. XL, Fig. 4. (Nat. Mus. of Costa Rica, No. 10868.)

Animal of green bowenite. Height 2.1 cm., length 3.8 cm. Pl. XL, Fig. 5 (Cat. No. $\frac{2939}{1212}$.)

Animal of green bowenite. Height 1.8 cm., length 4.3 cm. Pl. XL, Fig. 6. (Cat. No. $\frac{2939}{1216}$.)

Animal of stone. Height 3 cm., length 5.4 cm. Pl. XL, Fig. 7. (Nat. Mus. of Costa Rica, No. 8404.)

Animal of gray jade (?). Height 2.9 cm., length 5.2 cm. Pl. XL, Fig. 8. (Cat. No. $\frac{2438}{844}$.)

Animal of green bowenite with broad tail. Height 1.5 cm., length 3.9 cm. Pl. XL, Fig. 9. (Cat. No. $\frac{2939}{1213}$.)

Animal of stone. Height 2.5 cm., length 4.1 cm. Pl. XL, Fig. 10. (Nat. Mus. of Costa Rica, No. 10889.)

Animal of green jade. Height 3.5 cm., length 5.3 cm. Pl. XI, Fig. 11. (Cat. No. $\frac{2939}{1293}$.)

Animal of stone. Height 1.8 cm., length 4.2 cm. Pl. XI, Fig. 12. (Nat. Mus. of Costa Rica, No. 10781.)

Animal of stone. Height 2 cm., length 3 cm. Pl. XI, Fig. 13. (Cat. No. $\frac{2939}{1221}$.)

Animal of bluish jade. Height 2.1 cm., length 3.7 cm. Pl. XI, Fig. 14. (Cat. No. $\frac{2939}{1206}$.)

Animal of bluish jade. Height 1.5 cm., length 3 cm. Pl. XI, Fig. 15. (Cat. No. $\frac{2939}{1214}$.)

Animal of bluish jade. Height 1.1 cm., length 2.4 cm. Pl. XI, Fig. 16. (Cat. No. $\frac{2793}{41}$.)

Bat, with wings spread, of dark green bowenite. Height 4.8 cm., breadth 9.2 cm. Pl. XLI, Fig. 1. (Cat. No. $\frac{2939}{1183}$.)

Bat of gray stone. Height 3.2 cm., breadth 3.6 cm. Pl. XLI, Fig. 2. (Cat. No. $\frac{2438}{837}$.)

Bat of green bowenite, body ornamented with circular impressions. Height 4.3 cm., breadth 5.2 cm. Pl. XLI, Fig. 3. (Cat. No. $\frac{2438}{836}$.)

Bat of green jade. Height 4.2 cm., breadth 6.7 cm. Pl. XLI, Fig. 4. (Cat. No. $\frac{2939}{1184}$.)

Bat, conventionalized, of stone. Height 4.4 cm., breadth 7.6 cm. Pl. XLI, Fig. 5. (Nat. Mus. of Costa Rica, No. 8130.)

Bat or owl of stone. Height 4.2 cm., breadth 11 cm. Pl. XLI, Fig. 6. (Nat. Mus. of Costa Rica, No. 8490.)

Bat of stone. Height 3.8 cm., breadth 5.3 cm. Pl. XLI, Fig. 7. (Nat. Mus. of Costa Rica, No. 8133.)

Bat of green jade. Height 3.9 cm., breadth 4.9 cm. Pl. XLI, Fig. 8. (Cat. No. $\frac{2939}{1185}$.)

Bat or owl of stone. Height 6 cm., breadth 8 cm. Pl. XLI, Fig. 9. (Nat. Mus. of Costa Rica, No. 8342 (?).)

Amulet plain of green bowenite, possibly derived from the bat or owl. Height 3.3 cm., breadth 4.1 cm. Pl. XLI, Fig. 15. (Cat. No. $\frac{2939}{1292}$.)

Head of a wolf(?), of pale green bowenite. Height 2.5 cm., breadth 1.3 cm. Pl. XXXIX, Fig. 9. (Cat. No. $\frac{2939}{1275}$.)

Head of wolf(?), pale green bowenite(?). Height 2.6 cm., breadth 1.9 cm. Pl. XXXIX, Fig. 10. (Cat. No. $\frac{2438}{872}$.)

Head of wolf(?), pale green bowenite. Height 2.3 cm., breadth 2.3 cm. Pl. XXXIX, Fig. 11. (Cat. No. $\frac{2939}{1274}$.)

Head of deer of green bowenite. Height 2.8 cm., breadth 2.7 cm. Pl. XXXIX, Fig. 14. (Cat. No. $\frac{2939}{1272}$.)

Head of deer of pale green bowenite. Length 3.2 cm., breadth 1.7 cm. Pl. XXXIX, Fig. 22. (Cat. No. $\frac{2939}{1273}$.)

Animal of grayish green stone. Height 2.5 cm., breadth 1.4 cm. Pl. XLI, Fig. 10. (Cat. No. $\frac{2939}{1200}$.)

(c) *Bird Figurines and Heads.*

Of the bird figurines only one group occurs in any numbers. This bird is characterized by a very long slender beak, and is apparently a water bird. The bird is represented by a head, neck and simply an appendix for the body. The same type has also been figured in the above from my own excavations. Most of these birds are made of green stone. A bird's head of another type is shown on Pl. XXXIX, Fig. 17. See the following plates.

Bird head of bowenite with long, slender beak, body highly reduced, appendix-like. Height 3.7 cm. Pl. XL, Fig. 17. (Cat. No. $\frac{2939}{1231}$.)

Bird or bird's head of bowenite. Height 4.2 cm. Pl. XL, Fig. 18. (Cat. No. $\frac{2939}{1229}$.)

Bird of bowenite. Height 3.7 cm. Pl. XL, Fig. 19. (Cat. No. $\frac{2939}{1230}$.)

Bird of dark green bowenite. Height 2.7 cm. Pl. XL, Fig. 20. (Cat. No. $\frac{2939}{1240}$.)

Bird of bowenite. Height 3.3 cm. Pl. XL, Fig. 21. (Cat. No. $\frac{2939}{1234}$.)

Bird of bowenite. Height 2.8 cm. Pl. XL, Fig. 22. (Cat. No. $\frac{2939}{1246}$.)

Bird of bowenite. Height 3.5 cm. Pl. XL, Fig. X 23. (Cat. No. $\frac{2438}{858}$.)

Bird head of gray stone. Length 2.7 cm., breadth 1.7 cm. Pl. XXXIX, Fig. 17. (Cat. No. $\frac{2939}{1277}$.)

(d) *Various Animals of the Lower Orders.*

There are a number of artistically executed figures of frogs with the four legs spread. These too are nearly all of green stone. Compare Pl. XLI, Figs. 11, 13, 14, 17, 19, 20, 23 which show both realistic and conventionalized forms. There are even a few representations of turtles (see Pl. XLI, Figs. 16, 18) and of an alligator or lizard (see Pl. XLI, Figs. 21, 22).

Frog of gray stone. Length 4.9 cm., breadth 3.2 cm. Pl. XLI, Fig. 11. (Cat. No. $\frac{2939}{1187}$.)

Frog (?), conventionalized. Length 7.2 cm., breadth 5.4 cm. Pl. XLI, Fig. 12. (Nat. Mus. of Costa Rica, No. 8132.)

Frog of pale green bowenite. Length 4.6 cm., breadth 4 cm. Pl. XLI, Fig. 13. (Cat. No. $\frac{2939}{1189}$.)

Frog of stone. Length 4.6 cm., breadth 4.3 cm. Pl. XLI, Fig. 14. (Nat. Mus. of Costa Rica, No. 3356.)

Turtle of gray stone. Length 3.3 cm., breadth 2.9 cm. Pl. XLI, Fig. 16. (Cat. No. $\frac{2438}{843}$.)

Frog of serpentine. Length 3 cm., breadth 1.9 cm. Pl. XLI, Fig. 17. (Cat. No. $\frac{2438}{842}$.)

Turtle of serpentine. Length 5.5 cm., breadth 3.5 cm. Pl. XLI, Fig. 18. (Cat. No. $\frac{2939}{1186}$.)

Frog of quartz. Length 4.4 cm., breadth 3.5 cm. Pl. XLI, Fig. 19. (Cat. No. $\frac{2939}{1186}$.)

Frog of quartz, conventionalized. Length 3.2 cm., breadth 2.8 cm. Pl. XLI, Fig. 20. (Cat. No. $\frac{2939}{1188}$.)

Alligator (?) of pale green bowenite. Length 5.4 cm., breadth 1.1 cm. Pl. XLI, Fig. 21. (Cat. No. $\frac{2939}{1145}$.)

Lizard (?) of bowenite. Length 8.8 cm., breadth 2.4 cm. Pl. XLI, Fig. 22. (Cat. No. $\frac{2939}{1194}$.)

Frog of pale green bowenite. Length 4.2 cm., breadth 2.4 cm. Pl. XLI, Fig. 23. (Cat. No. $\frac{2438}{841}$.)

3. TUBES.

Long cylindrical tubes resembling those here figured from Las Guacas were, as is well known, worn by the ancient Mayas and Mexicans as horizontal breast-ornaments. Beside their use as amulets they probably also served other purposes. The use of cane tubes by the medicine men for sucking prevails still in certain parts of Mexico as amongst the Tarahumares in Chihuahua. About the use of stone tubes for this purpose amongst the aborigines of California it may be of interest to give the following quotation²⁰ from E. G. Squier after Vanegas, "One mode (for curing disease) was very remarkable, and the good effect it sometimes produced heightened the reputation of the physician. They applied to the suffering part of the patient's body the *chacuaco*, a tube formed out of a very hard black stone; and through this they sometimes sucked and at other times blew, but both as hard as they were able, supposing that the disease was either exhaled or dispersed. Sometimes the tube was filled with cimarron or wild tobacco lighted and here they either sucked in or blew down the smoke, according to the physician's directions; and this powerful caustic sometimes without any other remedy has been known to entirely remove the disorder."

Quite a number of stone tubes varying in size and shape were encountered at Las Guacas. The largest are 12-20 cm. in length. They are all provided with a

²⁰Squier, E. G. and E. H. Davies. *Ancient Monuments, etc.* Smiths. Contrib., Vol. I, p. 227. Vanegas, California, Vol. I, p. 97.

cylindrical perforation passing through from one end to the other. Most of the tubes are almost perfectly cylindrical, as shown on Pl. XLII, Figs. 23, 24; others are cylindrical but tapering towards the ends, as shown on Pl. XLII, Fig. 27; while a few show somewhat flattened sides, as shown on Pl. XLII, Fig. 22, and still others are perfectly square in section as on Pl. XLII, Fig. 26. A few are encircled with raised bands and contracted at their ends, as illustrated on Pl. XLII, Fig. 21. Most of the tubes are of stones of beautiful color and highly polished.

Cylindrical tube of serpentine with a band incision at each end. Length 25.5 cm., thickness 2 cm. Pl. XLII, Fig. 23. (Cat. No. $\frac{2939}{1401}$.)

Cylindrical tube of serpentine, ornamented with encircling incisions near each end. Length 28.4 cm., diameter 2.5 cm. Pl. XLII, Fig. 24. (Cat. No. $\frac{2939}{1392}$.)

Cylindrical tube of bowenite, somewhat curved and ornamented with encircling incisions near each end. Length 5.3 cm., diameter 1.5 cm. Pl. XLII, Fig. 25 (Cat. No. $\frac{2939}{1400}$.)

Quadrangular tube of mottled greenish stone. Length 17.7 cm., thickness 1.6 cm. Pl. XLII, Fig. 26. (Cat. No. $\frac{2939}{1420}$.)

Cylindrical tube of serpentine with an elevated band ornament encircling each end. Length 18.7 cm., diameter 1.8 cm. Pl. XLII, Fig. 27. (Cat. No. $\frac{2939}{1402}$.)

4. BEADS.

These served for necklaces. They are all sizes and shapes: flat-cylindrical, round, tubular and olive-shaped. The flat-cylindrical are usually the smallest, and the only ones which seem to have been manufactured in any number large enough to have served for necklaces. Most of the other beads, to judge from my own finds, and the information obtained from the most experienced grave-plunderers of Nicoya, occur very sparingly, only one or two or a very few being met with to a skeleton. They, on account of their high value and scarcity, were perhaps used as pendants on necklaces, which may have consisted of shells, seeds, wood or other perishable material. All the characteristic forms of beads of Las Guacas have been figured in the previous text in the description of my own excavations on the spot. The very large, clumsy beads of olive-shape are peculiar, some apparently being pebbles which still retain their irregular form.

Small oblong, ring-shaped bead of bowenite(?). Length 1.6 cm., breadth 1.2 cm. Pl. XLII, Fig. 15. (Cat. No. $\frac{2438}{935}$.)

Globular bead of quartz. Diameter 1.6 cm. Pl. XLII, Fig. 16. (Cat. No. $\frac{2939}{1606}$.)

Flat-cylindrical bead of bowenite. Diameter 1.5 cm. (The writer's excavations at Las Guacas.) Pl. XLII, Fig. 28. (Cat. No. $\frac{2793}{1000}$.)

Flat-cylindrical bead of bowenite. Diameter 1.1 cm. Pl. XLII, Fig. 29. (Cat. No. $\frac{2939}{1068}$.)

5. *Various Small Objects without any Biomorphie Features.*

Under this group there are brought together a number of small artefacts, delicately executed and shaped as buttons, rings, cylinders, cups, bells, plates, etc. They are all pierced with holes for suspension and apparently have served as amulets, some probably as ear or lip ornaments, others as pendants for necklaces, etc. The following specimens illustrate the forms mentioned above.

Ring-shaped object of serpentine, of unknown use, but possibly for lip or ear ornament.²¹ Diameter 3.4 cm., thickness 1.8 cm. Pl. XLII, Fig. 1. (Cat. No. $\frac{2438}{929}$.)

Same ring-shaped object seen from above, showing the almost funnel-shaped interior. Pl. XLII, Fig. 2.

Disk-shaped button of quartz. Diameter 3.3 cm., thickness 1.1 cm. Pl. XLII, Fig. 3. (Cat. No. $\frac{2438}{933}$.)

Same disk-shaped button of quartz from the back, showing perforated shank. Pl. XLII, Fig. 4.

Round button of greenish bowenite with circular depression in the center. Diameter 3.3 cm., thickness .8 cm. Pl. XLII, Fig. 5. (Cat. No. $\frac{2438}{932}$.)

Same button seen from below. Pl. XLII, Fig. 6.

Round button of serpentine with circular depression in the center. Diameter 3.1 cm., thickness 1.5 cm. Pl. XLII, Fig. 7. (Cat. No. $\frac{2939}{1308}$.)

Same button seen from below. Pl. XLII, Fig. 8.

Round button of quartz, with circular depression in the center. Diameter 3.5 cm., thickness 1.4 cm. Pl. XLII, Fig. 9. (Cat. No. $\frac{2438}{931}$.)

Same button seen from below. Pl. XLII, Fig. 10.

Button of quartz, oblong, disk-shaped. Length 2.7 cm., breadth 2.4 cm. Pl. XLII, Fig. 11. (Cat. No. $\frac{2939}{1302}$.)

Same button seen from below. Pl. XLII, Fig. 12.

Ring-shaped object of quartz, resembling Fig. 1, Pl. XLII. Diameter 3.5 cm., thickness 1.8 cm. Pl. XLII, Fig. 13. (Cat. No. $\frac{2438}{930}$.)

Plate of mottled green jade, small, rectangular, at the ends dilated and provided with pairs of holes for fastening. Use unknown. Length 3.8 cm., breadth 1.4 cm. Pl. XLII, Fig. 14. (Cat. No. $\frac{2939}{1178}$.)

Bell of gray stone. Height 2.4 cm., breadth 2 cm. Pl. XXXIX, Fig. 16. (Cat. No. $\frac{2939}{1351}$.)

²¹ Compare "Veröffentlichungen aus dem Königlichen Museum für Völkerkunde." I Band, 1 Heft. Berlin, 1889, p. 6, Pl. IV.

Pair of ear tubes (?) of gray stone, cylindrical, hollow. Height 3.2 cm., breadth 1.8 cm. Pl. XXXIX, Figs. 18, 20. (Cat. No. $\frac{2939}{1319-1326}$.)

Bell of gray quartz. Height 3 cm., breadth 2.5 cm. Pl. XXXIX, Fig. 21. (Cat. No. $\frac{2939}{1330}$.)

Circular disk of pale green bowenite, two suspension holes near periphery at opposite ends. Upper side slightly convex, under side flat. Diameter 3.9 cm. Pl. XLII, Fig. 17. (Cat. No. $\frac{2939}{1299}$.)

Circular disk of serpentine with two holes close together near the upper end. Both sides flat. Diameter 3.7 cm. Pl. XLII, Fig. 18. (Cat. No. $\frac{2938}{937}$.)

Rectangular button of quartz, with circular depression in the center. Length 2.3 cm., breadth 1.8 cm. Pl. XLII, Fig. 19. (Cat. No. $\frac{2939}{1303}$.)

Same rectangular button of quartz seen from below. Pl. XLII, Fig. 20.

Square tube of green jade, corners rounded, ornamented with elevated encircling ridges or bands at the ends and center. Length 8.6 cm., breadth 12. cm. Pl. XLII, Fig. 21. (Cat. No. $\frac{2939}{1404}$.)

Nearly quadrangular tube or bead of greenish, mottled stone. Length 4.5 cm., thickness 1.5 cm. Pl. XLII, Fig. 22. (Cat. No. $\frac{2939}{1421}$.)

Bell of gray stone. Height 2 cm., breadth 1.8 cm. Pl. XXXIX, Fig. 23. (Cat. No. $\frac{2939}{1351}$.)

Bell of gray stone. Height 3 cm., breadth 2.5 cm. Pl. XXXIX, Fig. 24. (Cat. No. $\frac{2793}{1297}$.)

Diminutive, globular cup of bowenite. Height 3.5 cm., breadth 4.8 cm. Pl. XXXIX, Fig. 25. (Cat. No. $\frac{2939}{1314}$.)

Cylinder, compact of gray stone, encircled by an incision near the base and one near the top. Height 2.2 cm., breadth 1.6 cm. Pl. XXXIX, Fig. 26. (Cat. No. $\frac{2939}{1328}$.)

Oblong, flat amulet of obsidian with a perforated knob at the top. Height 6.3 cm., breadth 7.6 cm. Pl. XXXIX, Fig. 27. (Cat. No. $\frac{2939}{1291}$.)

Compact cylinder of pale green bowenite, widening towards the base and encircled by an incision near each end. Height 2.4 cm., breadth 1.6 cm. Pl. XXXIX, Fig. 28. (Cat. No. $\frac{2939}{1325}$.)

Diminutive cup of green bowenite. Height 2.6 cm., breadth 2.3 cm. Pl. XXXIX, Fig. 29. (Cat. No. $\frac{2939}{1318}$.)

Almost spool-shaped object (lip-plug?), of serpentine. Height 1.8 cm., diameter 2.3 cm. Pl. XXXIX, Fig. 30. (Cat. No. $\frac{2939}{1307}$.)

Buckle-shaped object of quartz. Use unknown. Length 4.3 cm., breadth 1.6 cm. Pl. XXXIX, Fig. 31. (Cat. No. $\frac{2939}{1298}$.)

Buckle-shaped object of dark green stone. Length 4 cm., breadth 2.9 cm. Pl. XXXIX, Fig. 32. (Nat. Mus. of Costa Rica, Velasco Coll.)

Buckle-shaped object of quartz. Length 4.7 cm., breadth 2.7 cm. Pl. XXXIX, Fig. 33. (Cat. No. $\frac{2939}{1321}$.)

Cylinder, compact of dark green bowenite, adorned with encircling incisions at both ends. Height 3.4 cm., diameter 1.8 cm. Pl. XXXIX, Fig. 34. (Cat. No. $\frac{2939}{1321}$.)

OBJECTS OF JADE AND OTHER GREEN STONES OF LAS GUACAS.

The burial-ground of Las Guacas has produced far more objects of jade than all other ancient sites of Southern Central America combined. Hundreds of specimens of jade, comprising all forms of amulets, beads, tubes, etc., have been found in this small spot. The term "jade" is then, as by previously quoted archeologists, p. 13, used in its common and widest, not in its strict mineralogical sense, comprising only jadeite and nephrite. Most of these "jades" are objects of bowenite, pale to dark green, or saussurite, bluish green, often with white spots, while the more or less translucent jadeites are less numerous. No close mineralogical investigation has however been made as yet of the jade objects of the Costa Rican collections of the Carnegie Museum, but I am indebted to Professor L. P. Gratacap of the American Museum of Natural History in New York for the general determination of the most conspicuous of the minerals represented in these collections. Professor Amos P. Brown²² of the University of Pennsylvania, who has published a study based on the Velasco collection, which was deposited in Philadelphia, considers it to contain "probably the best assemblage of worked (American) jade in existence."

In my previous excavations during 1897 in other burial-grounds of Nicoya and its surroundings, I found jade ornaments in the graves but sparingly. Few of those from other localities were so large and elaborate as those of Las Guacas. On the whole mainland of Costa Rica objects of jade are very rare. In all my excavations on the highlands I only came across a few small beads of this mineral. But some fine specimens of jade amulets have been found sporadically in graves on the slopes of Irazu, and even on the Atlantic coast at Mercedes, and one or two other places. All these finds, however, have been of Nicoyan origin. On the Pacific side of Nicaragua jade objects also have been reported, but even all of these which I have seen show forms identical to those characteristic of Nicoya. The extensive excavations at Chiriqui seem only to have brought to light a single specimen of jade, a common type of the Nicoyan plain amulets included in the collections of the Yale University Museum.

²² Brown, Amos P. "Jade and similar green stones." Bull. Free Museum of Science and Art of the University of Pennsylvania, April, 1898, p. 145.

In Salvador no single object of jade has to my knowledge been found. In Guatemala and Honduras jade objects again appear, but as yet not very numerous finds have been made. Whether the jade for these objects was found in these states or whether it was obtained from the rich veins of southern Mexico has yet to be found out by research.

No indication of the source of the ancient supply of the jades of Nicoya has as yet been discovered. Very likely, however, a mine may be located some day in the neighborhood of Las Guacas, as not only the great majority of all jade artefacts have been found here, but also worked blocks of the crude stone, proving that celt-



FIG. 71. Block of jadeite ($\frac{1}{3}$). (Nat. Mus. of Costa Rica, No. 9096.)



FIG. 72. Same Block of jadeite seen from the back ($\frac{1}{3}$).

shaped amulets were probably manufactured at this very spot. The largest specimen of a similar core of pure, translucent jadeite encountered is the one represented by Text Figs., 71, 72, which belongs to the Velasco collection of the National Museum of Costa Rica. Another, a large water-worn pebble of pure translucent jadeite from Las Guacas is illustrated by Pl. XXXII, Figs. 3 and 4, and a worked block of bowenite by Pl. XXXII, Figs. 1 and 2.

Ornamental objects of jade were almost exclusively manufactured in Nicoya. This precious mineral was hardly ever used for tools. Only a couple of small celts of jade, which have served as tools, are found in the Velasco collections of the Carnegie Museum.

A mineralogical study of jade objects of the United States National Museum of Washington has been published by F. W. Clarke and G. P. Merrill,²³ and this paper includes six specimens from Las Guacas and a few from other places of Nicoya.

In the monumental and elaborate work of Heber R. Bishop: "Investigations and Studies in Jade," color reproductions are given of a few objects of jade, mostly celts, from Guatemala and New Mexico.

In the present work, on Pls. XLIII, XLIV, XLV, are brought together and

²³ F. W. Clarke and G. P. Merrill. "On Nephrite and Jadeite." *Proc. of the U. S. Nat. Mus.*, 1888, pp. 115-130.

reproduced in colors a number of representative objects of jade and other green stones from Las Guacas in order to show the different tints, and texture variants, characteristic of the jades of this locality.²⁴ For comparison, on Pl. XLVI, is reproduced a collection of jade objects, characteristic types, from the state of Oaxaca, where ornaments of jade are more numerous than elsewhere in Mexico. The objects belong to Mr. George G. Heye of New York City and were obtained from Dr. Carl Lumholtz and other collectors.

The jade objects reproduced in color, of the Velasco collection are the following:

Amulet, human figure of translucent, bluish green jadeite, highly polished. Tattoo marks on the arms above the elbows. Length 8.4 cm., breadth 3.7 cm. Pl. XLIII, Fig. 1. (Cat. No. $\frac{2.939}{406}$.)

Amulet, human figure with high head-dress and arms crossed on breast. Material, yellowish green, highly polished stone. Length 14.3 cm., breadth 4.3 cm. Pl. XLIII, Fig. 2. (Cat. No. $\frac{2.939}{266}$.)

Amulet of bluish green, highly polished jadeite, oblong, flat and thin, representing a conventionalized human figure ornamented with a head-dress. Length 18.7 cm., breadth 5.4 cm. Pl. XLIII, Fig. 3. (Cat. No. $\frac{2.939}{262}$.)

Amulet of bluish green, highly polished, translucent jadeite; divided lengthwise, and representing a human figure with high head-dress. Length 17 cm., breadth 2.2 cm. Pl. XLIII, Fig. 4. (Cat. No. $\frac{2.939}{410}$.)

Amulet, divided lengthwise, of bluish green, translucent, highly polished jadeite, representing a conventionalized human figure. Length 17.8 cm., breadth 1.3 cm. Pl. XLIII, Fig. 5. (Cat. No. $\frac{2.939}{412}$.)

Bird-shaped amulet of bluish green, highly polished jadeite. Length 7 cm., breadth 1.8 cm. Pl. XLIII, Fig. 6. (Cat. No. $\frac{2.939}{549}$.)

Amulet of bluish green, white mottled, highly polished jadeite, triangular, plain, thin, flat and translucent. Length 6.2 cm., breadth 3.4 cm. Pl. XLIII, Fig. 7. (Cat. No. $\frac{2.939}{971}$.)

Celt-shaped amulet of bluish green, highly polished, translucent jadeite. Length 7.5 cm., breadth 1.8 cm. Pl. XLIII, Fig. 8. (Cat. No. $\frac{2.939}{924}$.)

Celt-shaped amulet, slender and translucent, of bluish green, highly polished jadeite. Length 9 cm., breadth 1.3 cm. Pl. XLIII, Fig. 9. (Cat. No. $\frac{2.939}{923}$.)

Bird-shaped amulet, flat and thin, of translucent, bluish green, highly polished jadeite. Length 5.8 cm., breadth 4.7 cm. Pl. XLIII, Fig. 10. (Cat. No. $\frac{2.939}{539}$.)

Bird-shaped amulet of bluish green, translucent, highly polished jadeite. Pl. XLIV, Fig. 1. (Cat. No. $\frac{2.939}{529}$.)

²⁴ On Plates XLV and XLVI the green color is too pronounced.

Bird-shaped amulet of translucent, highly polished grayish blue jadeite with whitish streaks. Length 6.3 cm., breadth 2.7 cm. Pl. XLIV, Fig. 2. (Cat. No. $\frac{2939}{580}$.)

Amulet of bluish green, highly polished jadeite, representing human figure with hands meeting on breast. Length 6.7 cm., breadth 3 cm. Pl. XLIV, Fig. 3. (Cat. No. $\frac{2939}{301}$.)

Bird-shaped amulet of dark bluish green, highly polished jadeite. Length 6.1 cm., breadth 2.9 cm. Pl. XLIV, Fig. 4. (Cat. No. $\frac{2939}{530}$.)

Bird-shaped amulet of pale bluish green, highly polished stone. Length 6.8 cm., breadth 2.1 cm. Pl. XLIV, Fig. 5. (Cat. No. $\frac{2939}{579}$.)

Amulet of highly polished, dark bluish green jadeite in the shape of a bat with spread wings, which are covered with incised designs. The symmetrical designs on both wings each represent a human face enframed by a V-shaped band with guilloche patterns. At the upper end of each wing there is the head of an animal with upturned nose, and below this there are groups of parallel incised lines by which the artist apparently designated the fingers. (Compare the bats on Pl. XLI.) This object represents undoubtedly the most perfect specimen of workmanship in precious stone ever found in Costa Rica. Its weight is 11 ounces, length 15.3 cm., height 4.1 cm. Pl. XLIV, Fig. 6. (Cat. No. $\frac{2939}{1181}$.)

Bat-shaped amulet with spread wings, of pale bluish gray, highly polished stone. Length 8.8 cm., height 2.8 cm. Pl. XLIV, Fig. 7. (Cat. No. $\frac{2939}{1182}$.)

Bird-shaped amulet of bowenite, highly polished. Length 9.3 cm., breadth 3.6 cm. Plate XLIV, Fig. 8. (Cat. No. $\frac{2939}{520}$.)

Bird-shaped amulet of partly whitish, partly pale greenish blue, highly polished jadeite. Length 7.4 cm., breadth 3.8 cm. Pl. XLIV, Fig. 9. (Cat. No. $\frac{2939}{523}$.)

Bird-shaped amulet of dark green bowenite of dull luster. Length 8.3 cm., breadth 1.6 cm. Pl. XLIV, Fig. 10. (Cat. No. $\frac{2939}{548}$.)

Bird-shaped amulet of mottled dark green, highly polished jadeite(?). Length 10.5 cm., breadth 4.4 cm. Pl. XLIV, Fig. 11. (Cat. No. $\frac{2939}{519}$.)

Amulet of bluish green jadeite, representing an animal. Length 2.9 cm., breadth 1.7 cm. Pl. XLV, Fig. 1. (Cat. No. $\frac{2939}{1251}$.)

Diminutive ax-like amulet of greenish blue jade. Length 2.5 cm., breadth 1.1 cm. Pl. XLV, Fig. 2. (Cat. No. $\frac{2939}{1003}$.)

Thin celt-shaped amulet of translucent, bluish green jadeite, with hole for suspension near the lower end. Length 7.1 cm., breadth 3 cm. Pl. XLV, Fig. 3. (Cat. No. $\frac{2939}{925}$.)

Amulet of greenish blue saussurite, representing an animal with upturned tail. Length 2.9 cm., height 2.2 cm. Pl. XLV, Fig. 4. (Cat. No. $\frac{2939}{1216}$.)

Amulet of greenish blue saussurite, representing an animal with upturned tail. Length 4.7 cm., height 2.8 cm. Pl. XLV, Fig. 5. (Cat. No. $\frac{2939}{1203}$.)

Celt-shaped amulet of bluish green jade with blackish streaks, with conventionalized animal heads at upper end. Length 8 cm., breadth 2.2 cm. Pl. XLV, Fig. 6. (Cat. No. $\frac{2939}{633}$.)

Celt-shaped, plain amulet of translucent greenish blue jadeite. Length 17.6 cm., breadth 2.8 cm. Pl. XLV, Fig. 7. (Cat. No. $\frac{2939}{892}$.)

Triangular amulet of bright green, white mottled jade. Length 3.4 cm., breadth 1.8 cm. Pl. XLV, Fig. 8. (Cat. No. $\frac{2939}{1280}$.)

Nearly leaf-shaped, plain amulet, thin and flat, of translucent, greenish blue jadeite. Length 5.8 cm., breadth 2.6 cm. Pl. XLV, Fig. 9. (Cat. No. $\frac{2939}{965}$.)

Portion of a plate-like amulet of mottled pale green jade, adorned with low relief figures of two human faces with head-dresses and ear ornaments; the one seen "en face" forming the center of the plate, the other being sculptured in profile on its left border. The portion to the right is broken off. This specimen is undoubtedly of extraneous origin, obtained by the Indians from some northern source. Length 5.8 cm., breadth 4.6 cm. Pl. XLV, Fig. 10. (Cat. No. $\frac{2939}{1628}$.)

Plain, celt-shaped amulet of yellowish green jadeite. Length 6.3 cm., breadth 1.5 cm. Pl. XLV, Fig. 11. (Cat. No. $\frac{2939}{926}$.)

Diminutive celt-shaped amulet of greenish blue jadeite, adorned with an incised conventionalized animal or human figure. Length 2.6 cm., breadth 0.9 cm. Pl. XLV, Fig. 12. (Cat. No. $\frac{2939}{556}$.)

Small, oblong plain pendant of greenish jadeite. Length 2.6 cm., breadth 0.9 cm. Pl. XLV, Fig. 13. (Cat. No. $\frac{2939}{1008}$.)

Celt-shaped, plain amulet of translucent, greenish jadeite. Length 5.3 cm., breadth 1.2 cm. Pl. XLV, Fig. 14. (Cat. No. $\frac{2939}{970}$.)

Amulet, head of bird (?), of mottled bluish saussurite with white band. Length 3.4 cm., breadth 2.4 cm. Pl. XLV, Fig. 15. (Cat. No. $\frac{2939}{1294}$.)

Celt-shaped amulet of greenish gray stone, with an incised band at the upper end. Length 3.4 cm., breadth 2 cm. Pl. XLV, Fig. 16. (Cat. No. $\frac{2939}{649}$.)

Plain, celt-shaped amulet of greenish yellow stone. Length 5.7 cm., breadth 1.5 cm. Pl. XLV, Fig. 17. (Cat. No. $\frac{2939}{969}$.)

Oblong, cylindrical bead of greenish blue saussurite. Length 2.7 cm., diameter 1.3 cm. Pl. XLV, Fig. 18. (Cat. No. $\frac{2939}{1618}$.)

Oblong, cylindrical bead of greenish blue saussurite. Length 2.2 cm., diameter 1.2 cm. Pl. XLV, Fig. 19. (Cat. No. $\frac{2939}{1620}$.)

Oblong, cylindrical bead of greenish blue saussurite. Length 1.7 cm., diameter 1.2 cm. Pl. XLV, Fig. 20. (Cat. No. $\frac{2939}{1619}$.)

Celt-shaped amulet, flat and thin, of translucent, greenish blue jadeite. Length 5.8 cm., breadth 1.3 cm. Pl. XLV, Fig. 21. (Cat. No. $\frac{2939}{968}$.)

Plain, celt-shaped amulet of greenish blue translucent jadeite. Length 3.9 cm., breadth 1 cm. Pl. XLV, Fig. 22. (Cat. No. $\frac{2939}{999}$.)

Small pendant of greenish blue jadeite, with an incised band at the upper end. Length 2.3 cm., breadth 1 cm. Pl. XLV, Fig. 23. (Cat. No. $\frac{2939}{255}$.)

Amulet of greenish blue saussurite representing an animal with upturned tail. Length 2.9 cm., breadth 2.1 cm. Pl. XLV, Fig. 24. (Cat. No. $\frac{2939}{1208}$.)

Tube of mottled greenish gray jadeite, squared cylindrical, with three encircling band ornaments. Length 8.4 cm., breadth 1.3 cm. Pl. XLV, Fig. 25. (Cat. No. $\frac{2939}{1404}$.)

Amulet of white mottled greenish blue saussurite, representing an animal. Length 2.6 cm., height 1.4 cm. Pl. XLV, Fig. 26. (Cat. No. $\frac{2939}{1289}$.)

Small curved pendant of translucent greenish jadeite. Length 1.8 cm., breadth 0.8 cm. Pl. XLV, Fig. 27. (Cat. No. $\frac{2939}{1014}$.)

OBJECTS OF JADE FROM MEXICO.

The specimens here reproduced for comparison are from the state of Oaxaca. They were obtained from Dr. Carl Lumholtz and other collectors and were loaned me for reproduction by Mr. George G. Heye of New York City. Of these specimens the figurines represented in the three top rows of Pl. XLVI, show the structural shape of the mineral. The natives have simply taken advantage of the natural jade parallelograms and used two sides as a face for the carving of the human figures. Only a small number of specimens have the back rounded or flattened. All have suspension holes bored sideways. The following objects are illustrated.

Amulet of greenish white jadeite, representing a human figure in sitting position. Height 4.8 cm., breadth 1.9 cm. Pl. XLVI, Fig. 1.

Amulet of greenish white jadeite, representing a sitting human figure. Height 4.6 cm., breadth 2 cm. Pl. XLVI, Fig. 2.

Amulet of greenish white jadeite, representing a sitting human figure. Height 4.3 cm., breadth 2.3 cm. Pl. XLVI, Fig. 3.

Amulet of greenish jadeite, representing a sitting human figure. Height 4.2 cm., breadth 2.3 cm. Pl. XLVI, Fig. 4.

Amulet of greenish white jadeite, back flat, representing sitting human figure. Height 3.8 cm., breadth 2 cm. Pl. XLVI, Fig. 5.

Amulet of greenish white jadeite, back flat, representing sitting human figure. Height 3.2 cm., breadth 1.9 cm. Pl. XLVI, Fig. 6.

Amulet of greenish white jadeite, representing sitting human figure. Height 3.8 cm., breadth 1.5 cm. Pl. XLVI, Fig. 7.

Amulet of light green, translucent jadeite, representing sitting human figure. Height 4.4 cm., breadth 1.8 cm. Pl. XLVI, Fig. 8.

Amulet of light green, translucent jadeite, representing sitting human figure, back flat. Height 4.7 cm., breadth 2.1 cm. Pl. XLVI, Fig. 9.

Amulet of light green, translucent jadeite, representing sitting human figure. Height 4.2 cm., breadth 1.8 cm. Pl. XLVI, Fig. 10.

Amulet of light green, translucent jadeite, representing sitting human figure, back nearly flat. Height 2.6 cm., breadth 1.4 cm. Pl. XLVI, Fig. 11.

Amulet of light green, translucent jadeite, representing a sitting human figure, back flat. Height 2.9 cm., breadth 1.2 cm. Pl. XLVI, Fig. 12.

Amulet, small human head, of light green jadeite. Height 1.3 cm., breadth 1.4 cm. Pl. XLVI, Fig. 13.

Amulet of light green jadeite, human figure. Height 2.7 cm., breadth 1.3 cm. Pl. XLVI, Fig. 14.

Amulet of green jadeite, human head. Height 3 cm., breadth 2.7 cm. Pl. XLVI, Fig. 15.

Amulet, human figure, of greenish gray jadeite. Height 2.7 cm., breadth 1.7 cm. Pl. XLVI, Fig. 16.

Amulet of greenish white jadeite, human head. Height 2.3 cm., breadth 1.8 cm. Pl. XLVI, Fig. 17.

Rectangular amulet of green jadeite, plain, flat and thin. Height 2.1 cm., breadth 1.7 cm. Pl. XLVI, Fig. 18.

Amulet of greenish white jadeite, representing an animal. Height 1.8 cm., breadth 2.7 cm. Pl. XLVI, Fig. 19.

Button-like, flat, rectangular piece of greenish jadeite. Height 2.1 cm., breadth 1.7 cm. Pl. XLVI, Fig. 20.

Square ear or lip ornament of translucent, light green jadeite. Height 3 cm., breadth 3.1 cm. Pl. XLVI, Fig. 21.

Amulet of greenish gray jadeite, representing human head. Height 3.1 cm., breadth 2.5 cm. Pl. XLVI, Fig. 22.

Oblong, cylindrical bead of green jadeite. Length 2.6 cm., diameter 1.7 cm. Pl. XLVI, Fig. 23.

Nearly globular bead of greenish gray jadeite. Diameter 1.7 cm. Pl. XLVI, Fig. 24.

Amulet of greenish gray jadeite, flat, thin and rectangular, representing a human figure. Height 4.9 cm., breadth 2.1 cm. Pl. XLVI, Fig. 25.

Oblong, cylindrical bead of green mottled jadeite. Length 2.5 cm., diameter 1.7 cm. Pl. XLVI, Fig. 26.

Amulet of greenish gray jadeite, flat and thin, representing human head ornamented with head-dress. Height 3 cm., breadth 2 cm. Pl. XLVI, Fig. 27.

Amulet of greenish white jadeite, flat and thin, representing human head. Height 3.5 cm., breadth 2.7 cm. Pl. XLVI, Fig. 28.

Claw-shaped amulet or pendant of mottled, greenish white jadeite. Height 4.4 cm., breadth 1.7 cm. Pl. XLVI, Fig. 29.

Claw-shaped amulet or pendant of mottled greenish white jadeite. Height 3.2 cm., breadth 1.3 cm. Pl. XLVI, Fig. 30.

Claw-shaped amulet or pendant of mottled greenish white jadeite. Height 2.6 cm., breadth 1.1 cm. Pl. XLVI, Fig. 31.

Oblong, cylindrical bead of mottled whitish green jadeite. Length 2 cm., diameter 1.8 cm. Pl. XLVI, Fig. 32.

Thin, flat bead of mottled whitish green jadeite. Diameter 1.8 cm., thickness 0.3 cm. Pl. XLVI, Fig. 33.

Thin, flat, circular bead of mottled whitish green jadeite. Diameter 1.2 cm., thickness 0.2 cm. Pl. XLVI, Fig. 34.

Cylindrical tube of greenish white jadeite, widening towards both ends. Length 2.1 cm., diameter 1.1 cm. Pl. XLVI, Fig. 35.

Cylindrical tube of greenish white jadeite. Length 3.7 cm., diameter 1.1 cm. Pl. XLVI, Fig. 36.

Pendant, bell-shaped, flat and thin, of greenish white jadeite. Height 2.5 cm., breadth 1.8 cm. Pl. XLVI, Fig. 37.

Pendant of translucent, green jadeite adorned with vertical parallel incisions at the lower end. Height 1.6 cm., breadth 1.3 cm. Pl. XLVI, Fig. 38.

RECAPITULATION.

The collections made at Las Guacas show that in this region the art of the stone-cutter and polisher had reached a remarkably advanced stage of development.

If we compare these stone artefacts with similar vestiges of the art of the mainland of Costa Rica, more especially with the relics of the culture of the Güetares of the Atlantic coast and the highlands (the Pacific slope and coastland are as yet almost unexplored) we observe, as already pointed out, not only marked differences in general shape and in ornamentation, but that several entire groups of stone artefacts are limited almost exclusively to one region, while missing in the other, a few stray objects alone excepted. We search in vain in the upland regions for most of

the above described groups of "Las Guacas" stone artefacts, such as the small celt-shaped, polished amulets of jade and other decorative stones, the tubes, ear-plugs, most of the small objects of personal adornment, the biomorphic ceremonial clubs, the large double-bladed sharp-edged axes, the bark-scrapers, and the beautiful, high-legged metates with curved plate and artistic ornamentation.

In both the regions here contrasted the art of the sculptor in basaltic lava, the stone selected for the manufacture of household and ceremonial objects of larger size, has left numerous highly creditable examples of his work, although differing in character and conception. On the other hand the special art of the manufacture and polishing of precious or decorative stones to be worn as amulets or ornaments is almost exclusively limited to the Las Guacas culture, which in consequence has attained a many-sided development. The few amulets and beads of stone occasionally encountered in the graves of the Güetares are probably all of Nicoyan origin.

While the sculptor in basalt in Nicoya devoted most of his attention to metates and their ornamentation, the skill of the highlander brought forth a large group of related objects, generally so-called "stools," either provided with an oval plate and four legs representing a jaguar, or with a circular plate, with annular base often composed of the figures of monkeys. The Güetares produced numerous stone idols in human shape, varying in height, even reaching full life size, as well as human heads of stone with flat bases. The latter they deposited in the graves. In Nicoya stone idols are of rare occurrence and are quite different in shape. No stone heads of this type have been found on the peninsula. Almost the only artefacts of stone in the two regions which show similarity are the smaller stone celts of the type illustrated in this memoir. The celts of black aphanite typical of the highlands and having a diamond-shaped section do not occur in Nicoya.

The generally close relationship between the culture of the Chiriquians of Columbia and the Güetares has long ago been pointed out by Professor W. H. Holmes. The similarity is especially striking in the stone objects brought to light. Having had the opportunity to compare the vast archeological material of the National Museum of Costa Rica and of the private collections of the same country with the extensive collection of material from Chiriqui in the Yale University Museum and in the National Museum in Washington I find that the principal stone artefacts appear, as a rule, to be almost identical in form. The idols, however, plainly differ in several respects. On the other hand the Chiriquian collections contain whole groups of ceramic artefacts of a superior character and not found in the territories of the Güetares.

The Las Guacas culture appears to be a local development with many peculiar

traits. The limits of its extension are not as yet known, but it is probably restricted to the peninsula of Nicoya, the islands of the bay and the adjoining part of the Pacific slope of Nicaragua. The archeology of the Atlantic side of Nicaragua unfortunately is still on the whole a *terra incognita*.

Certain features of the art of the stone-cutter and the methods of work here in vogue, such as the extensive manufacture of stone amulets, and the employment of the tubular drill in the manufacture of ornamental and ceremonial objects of hard and precious stones, exactly as among the ancient inhabitants of Mexico, plainly point to a northern origin of the Nicoyan culture. Further south on the whole isthmus no similar art products are met with. In the superb collection of Chiriquian art-products in the Yale University Museum there is only a single amulet of stone, a small celt-shaped object, undoubtedly of Nicoyan origin. The "Las Guacas" culture presumably represents the result of the blending of the artistic genius of the conquering Mexican colonies with that of peoples already previously located in these parts. Only through future long-continued detailed and systematic explorations in these regions as well as through much needed investigation of the treasures of the ancient burial-grounds of adjoining territories, as well as those of Chiapas and other South-Mexican states can this and other related archeological questions be ultimately settled.

The striking similarity between the stone metates of these parts and the stools of the West Indian Islands as shown by Dr. O. T. Mason and Dr. W. J. Fewkes has been referred to above.

The best preserved class of ancient artefacts of the Las Guacas culture are the stone objects, which have been described in these pages.

Of ceramic material from Las Guacas there unfortunately exist no authentic specimens except the small number of objects obtained during my own work on the spot and a very large number of small and diminutive globular pots purchased from Velasco. According to Velasco as well as Carillo and other men, who had carried on former excavations, the great majority of the large clay vessels in this burial-ground had been crushed by the pressure of the soil or had fallen to pieces when unearthed. No effort was made to keep together the pieces of a vessel which had fallen apart. In consequence only a very few larger vessels were preserved from this place and these were later on mixed up with pottery from other localities. Many decorated vases, I was informed had been found here, but generally the paintings on account of the long contact with the soil were obliterated or scaled off after exposure to the air.

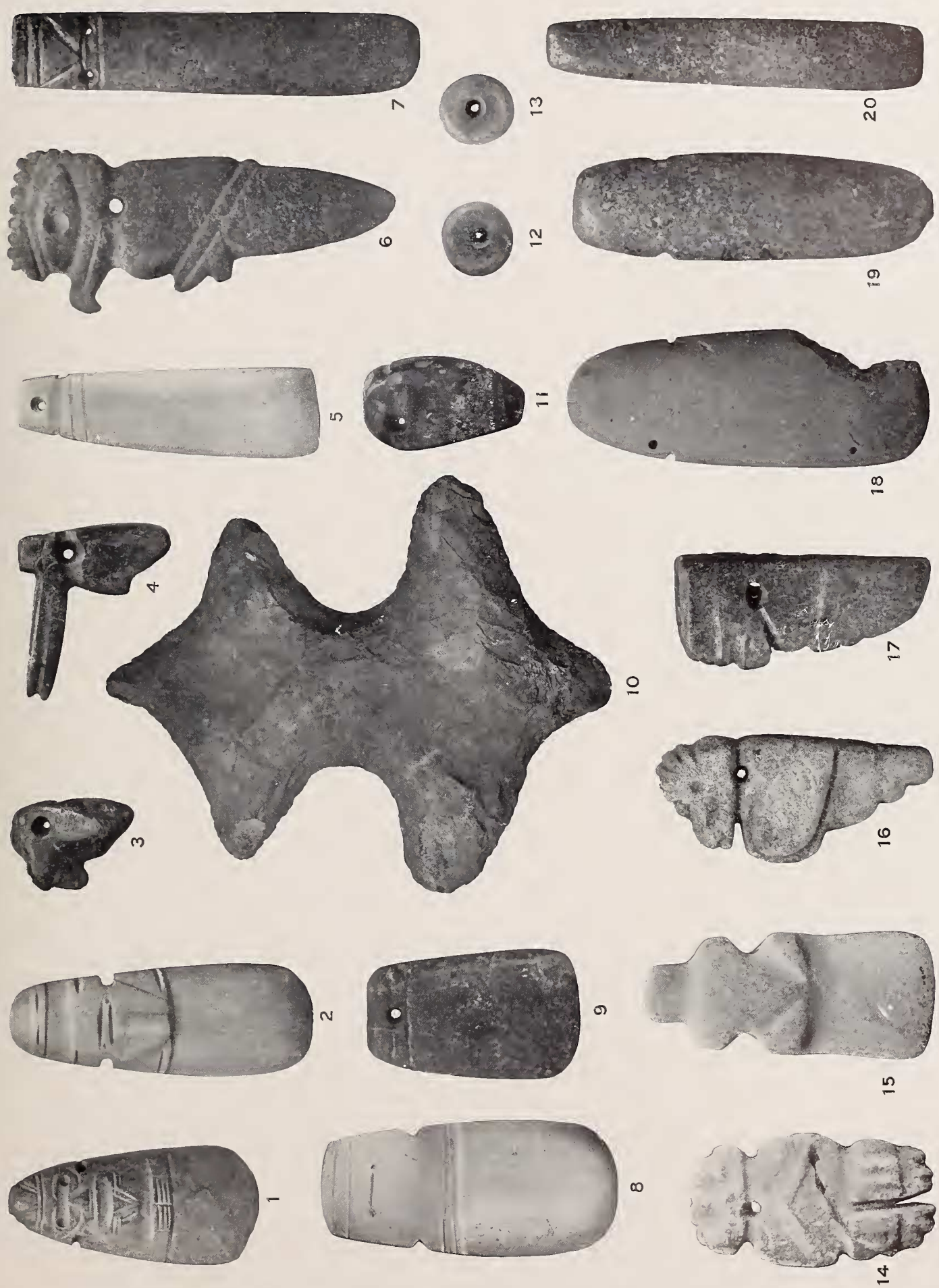
During my archeological investigations covering seven months in the immediate

neighborhood of Las Guacas as well as in other localities in Nicoya and on the islands of the Gulf I procured at several burial-grounds valuable material representing the same culture and these finds include a considerable number of earthen vessels of various forms and decorative features besides the above mentioned small globular vessels.

In a second memoir it is my hope to make use of these discoveries and to supplement them with illustrations and descriptions of a selection of the most interesting and remarkable specimens of pottery in the Velasco collection from various localities on the same peninsula. The comparatively few archeological objects of gold, copper, bone, shell, and other material preserved from these parts will also receive due attention.

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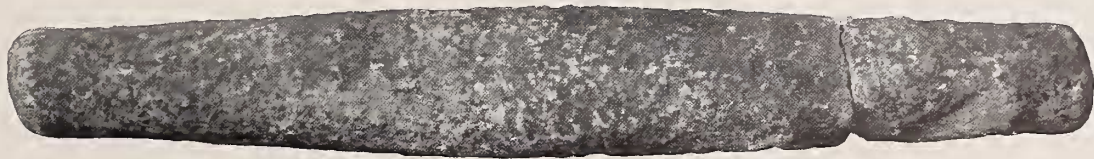
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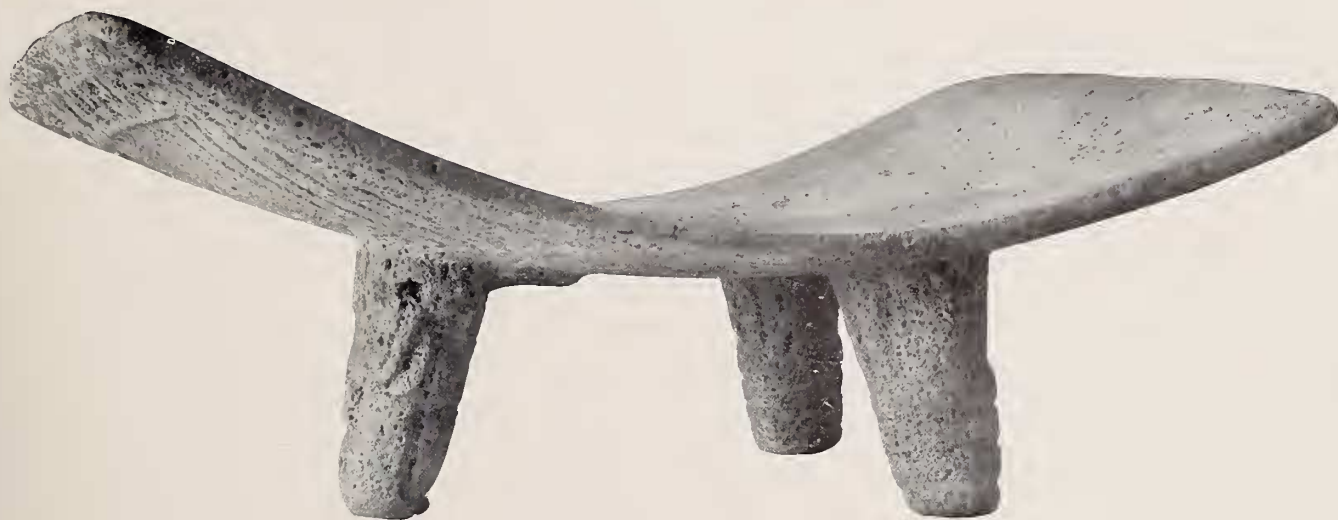


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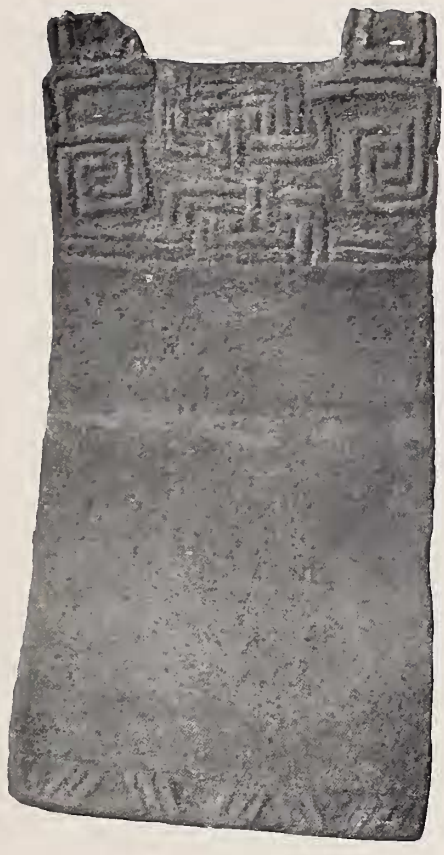
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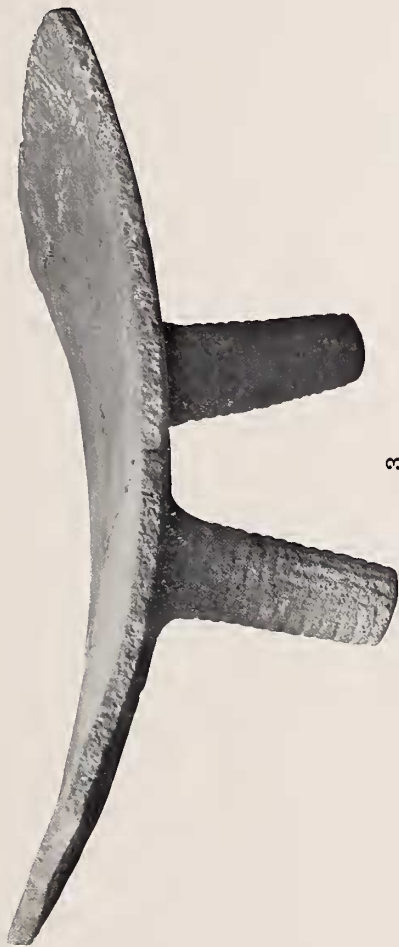
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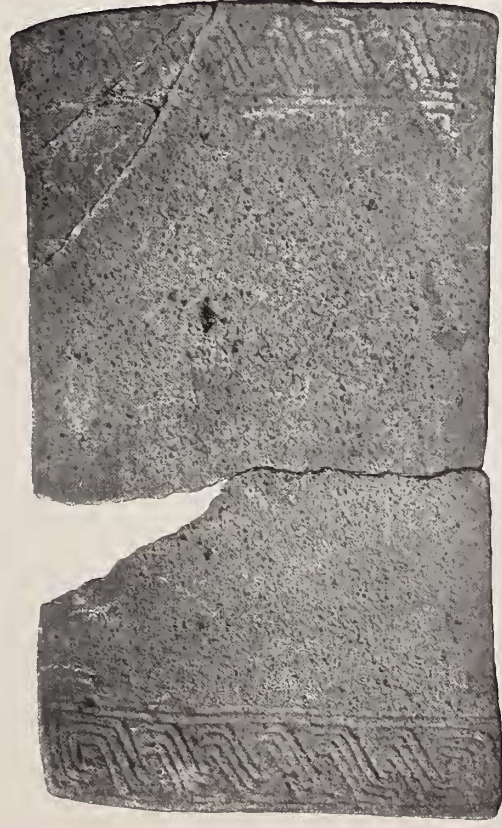


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1-2. METATE EXCAVATED AT LAS GUACAS BY C. V. HARTMAN.
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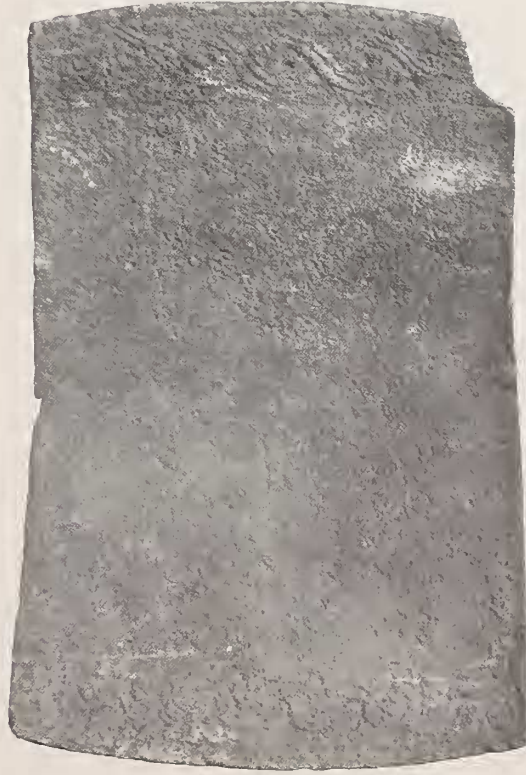
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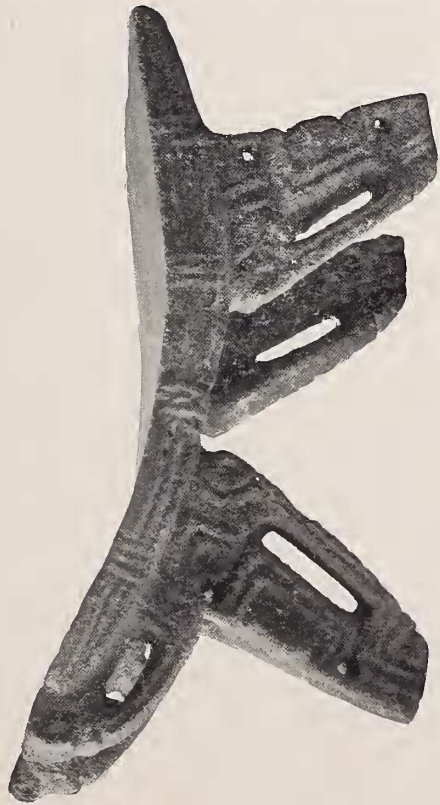
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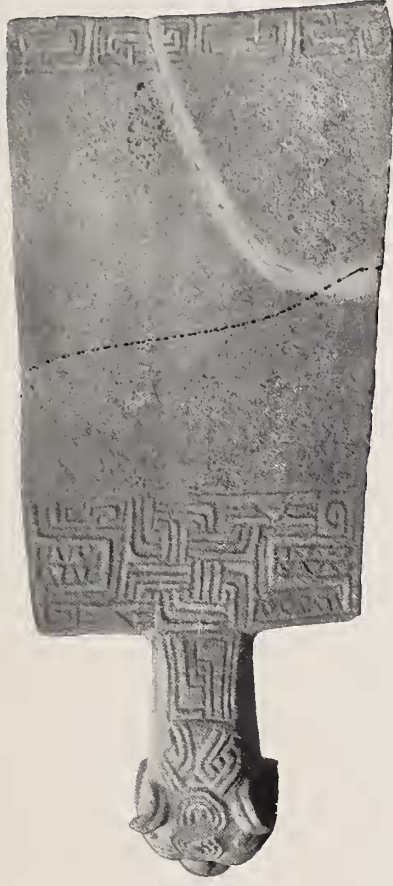
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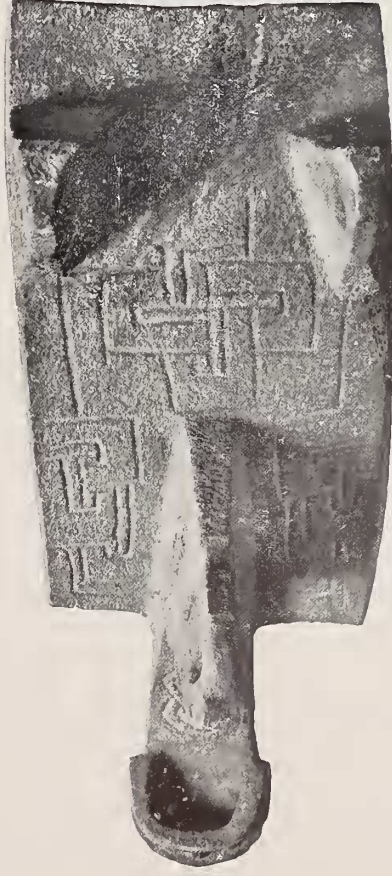
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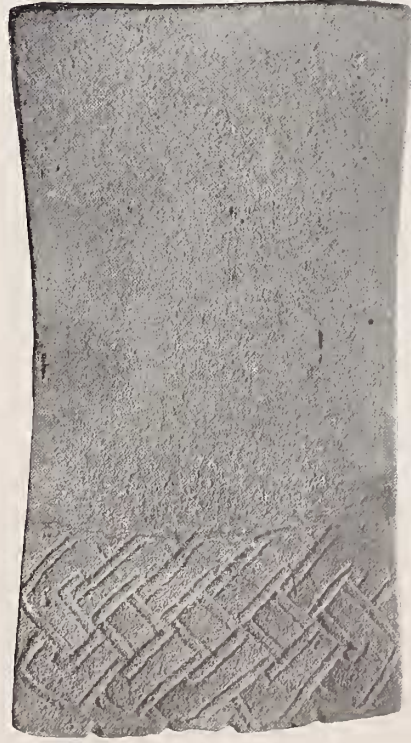
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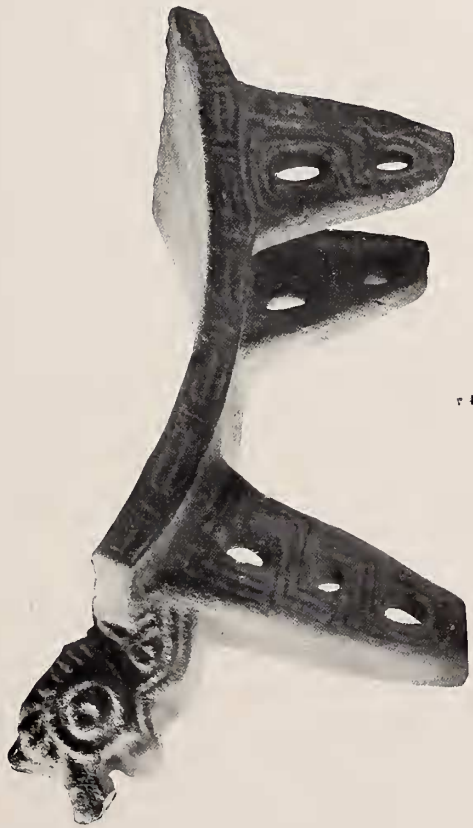


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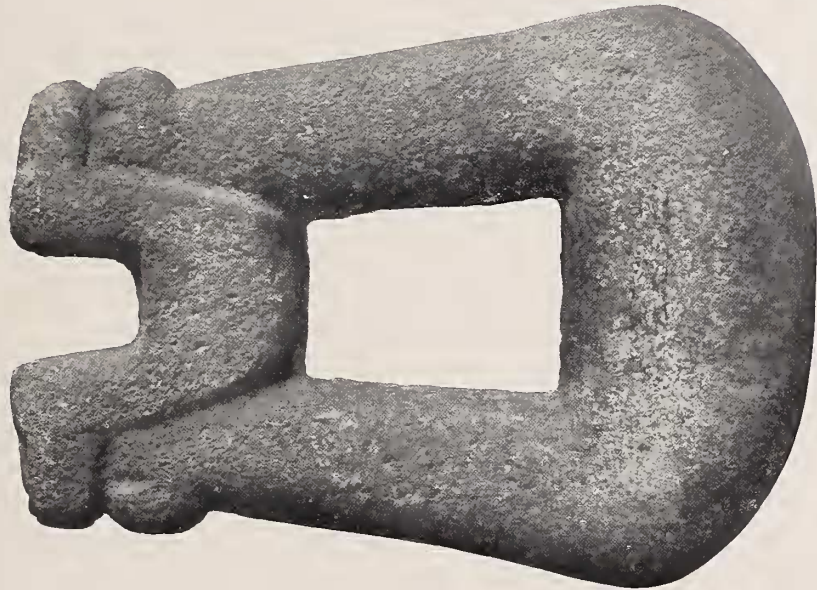
Photo by Rudd & Paynter, San José.

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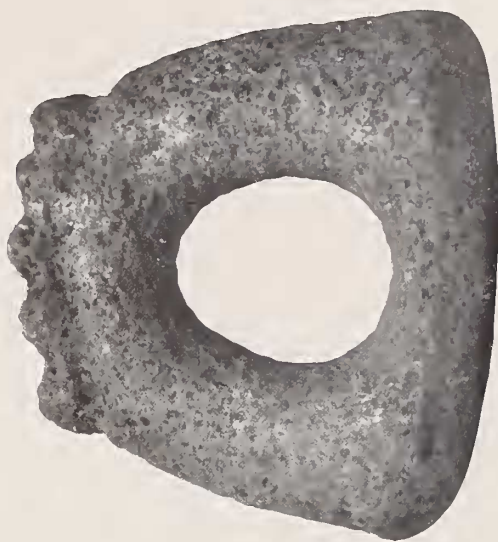
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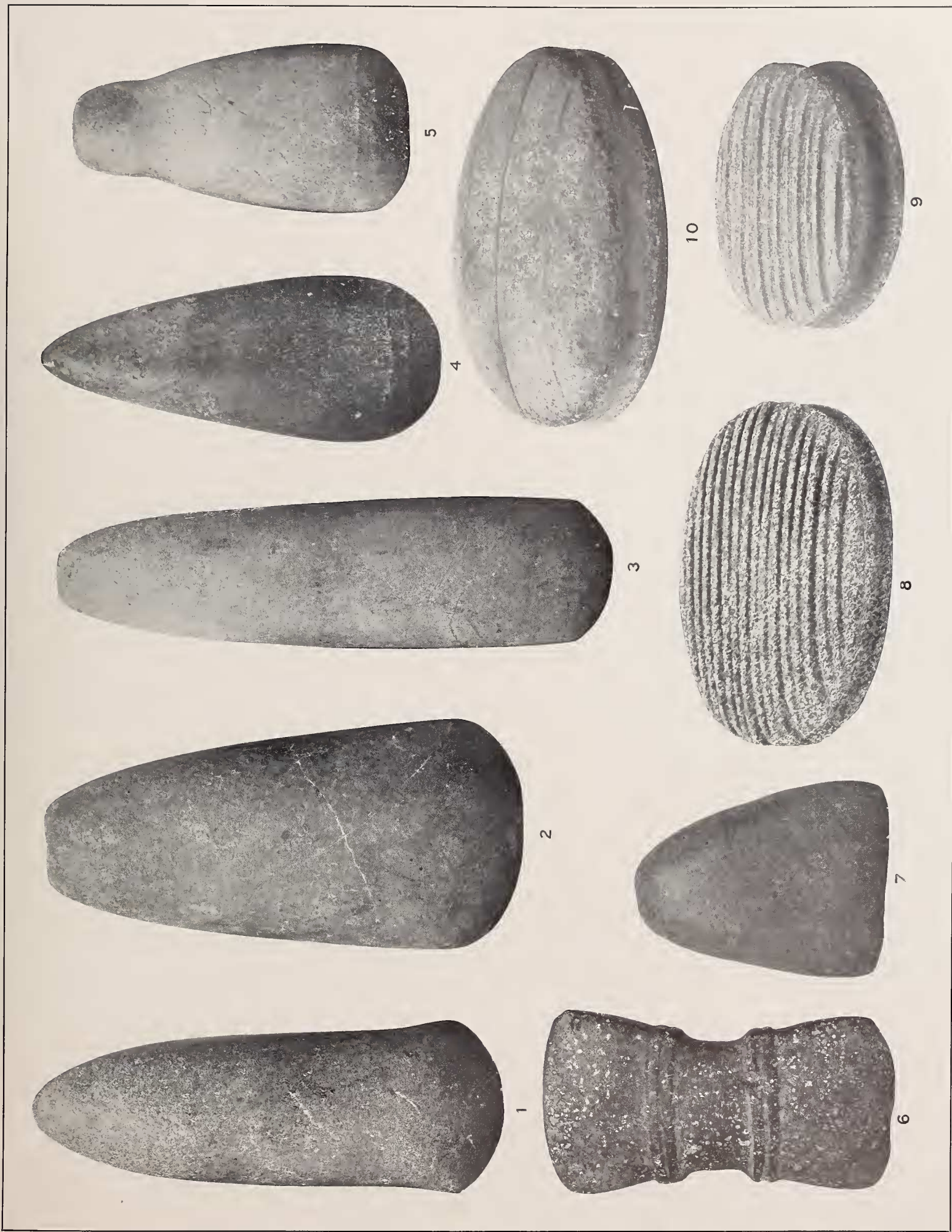
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EXPLANATION OF PLATE XXIII.

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CELTS, BARKSCRAPERS, ETC., FROM LAS GUACAS CONTAINED IN THE VELASCO COLLECTIONS OF THE CARNEGIE MUSEUM.

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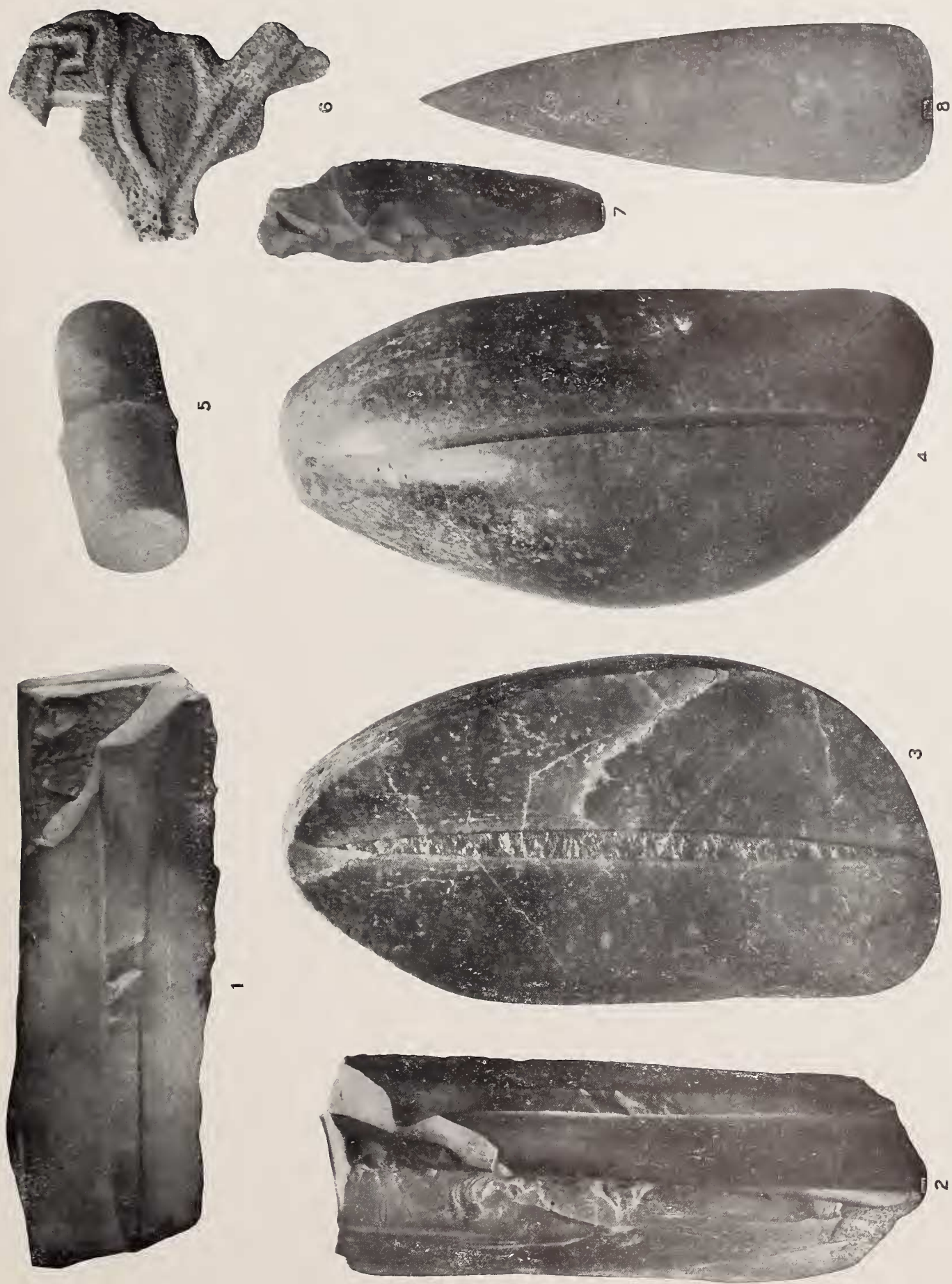
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EXPLANATION OF PLATE XXXII.

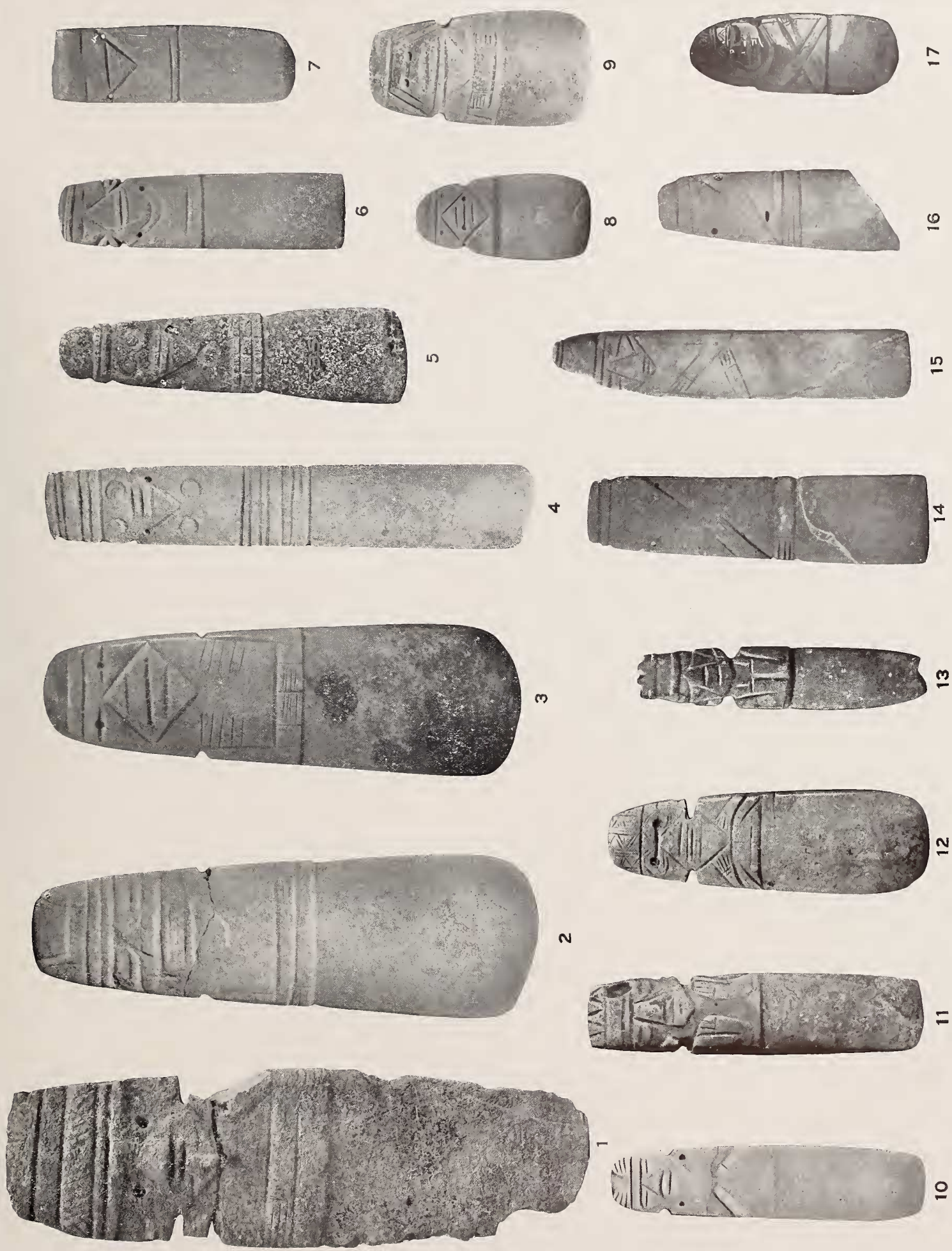
	PAGE.
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CORES AND VARIOUS OTHER STONE OBJECTS FROM LAS GUACAS CONTAINED IN THE VELASCO COLLECTIONS OF THE CARNEGIE MUSEUM.

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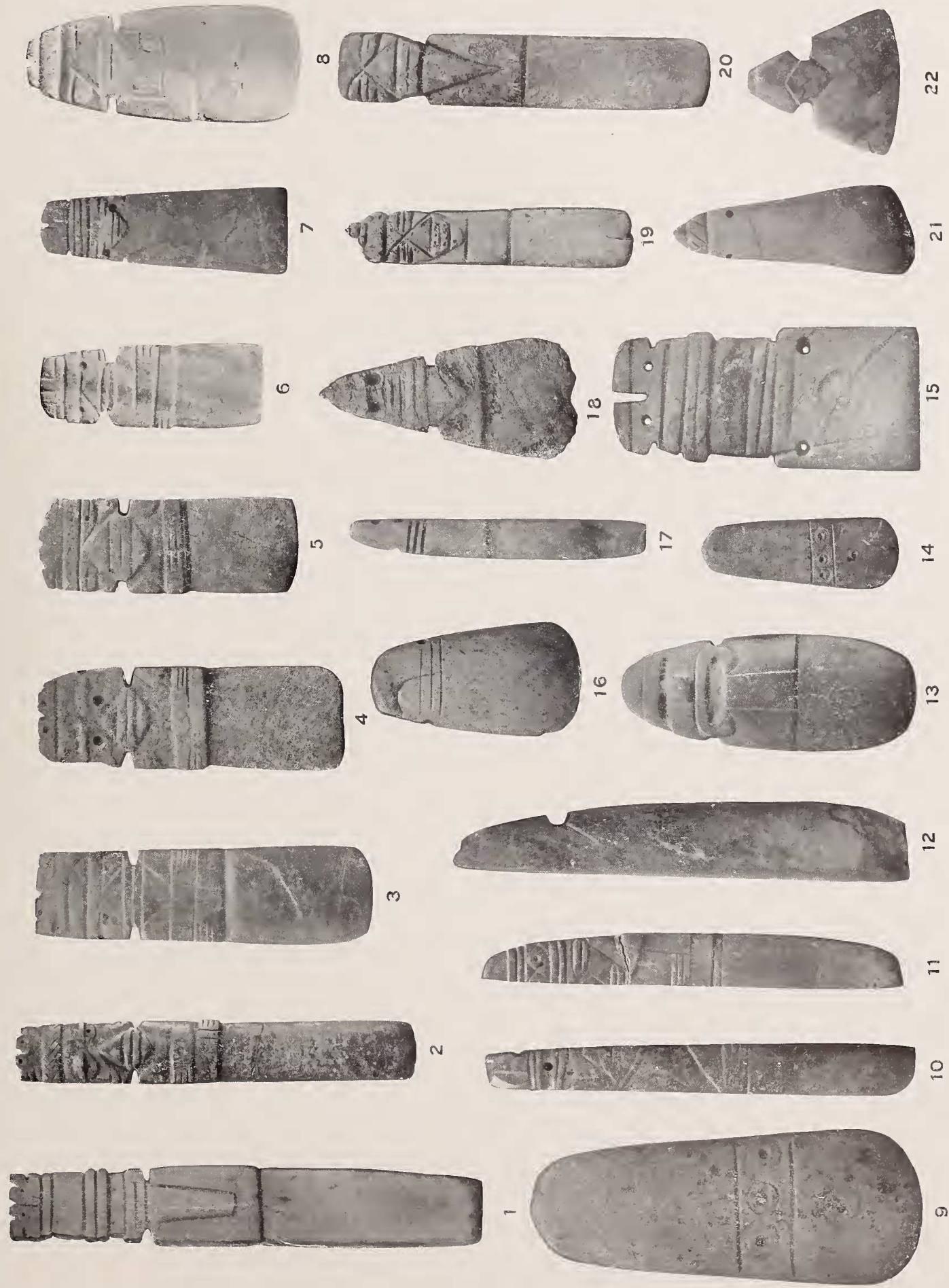
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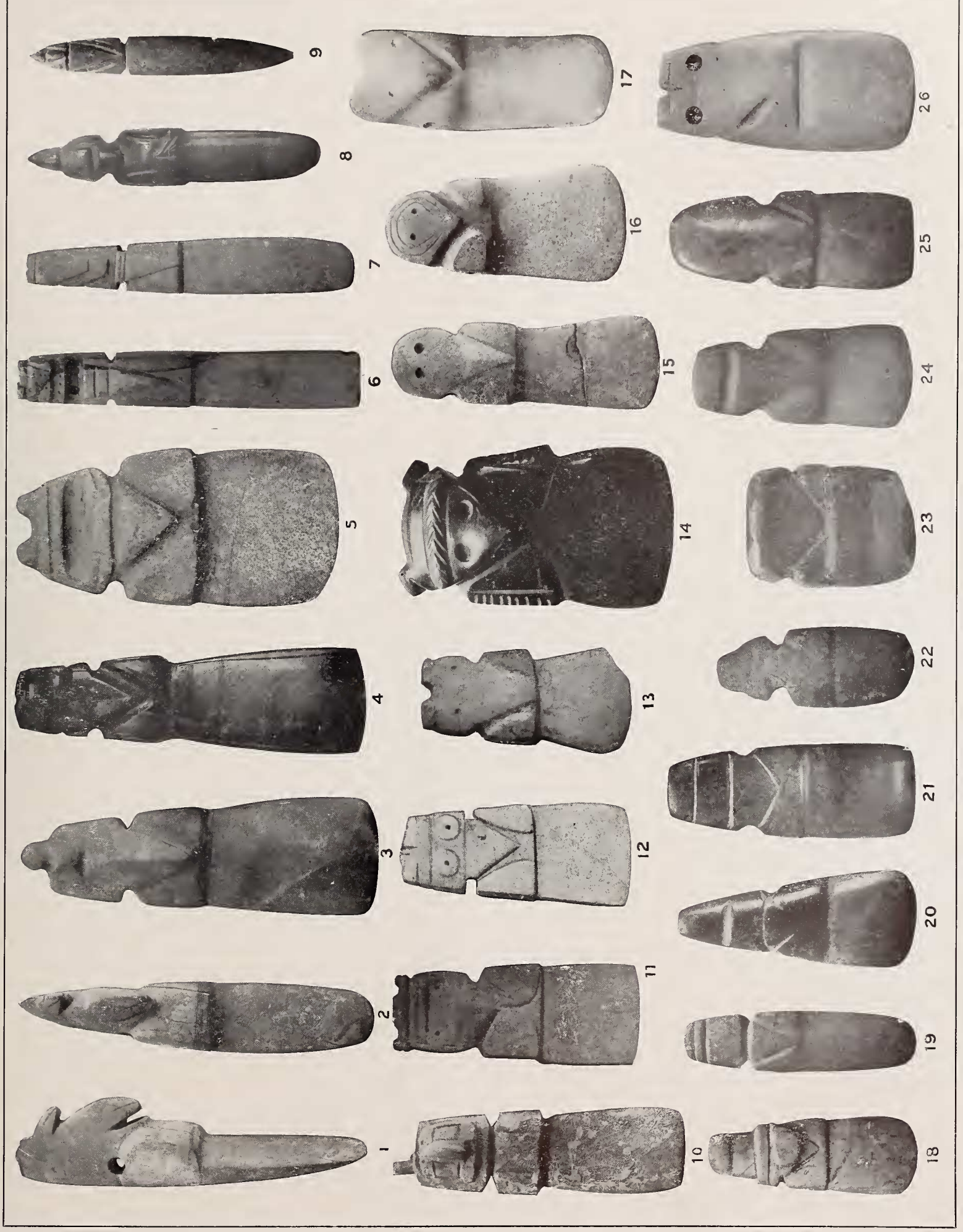
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AMULETS OF STONE FROM LAS GUACAS CONTAINED IN THE VELASCO COLLECTIONS OF THE CARNEGIE MUSEUM AND THE NATIONAL MUSEUM OF COSTA RICA.

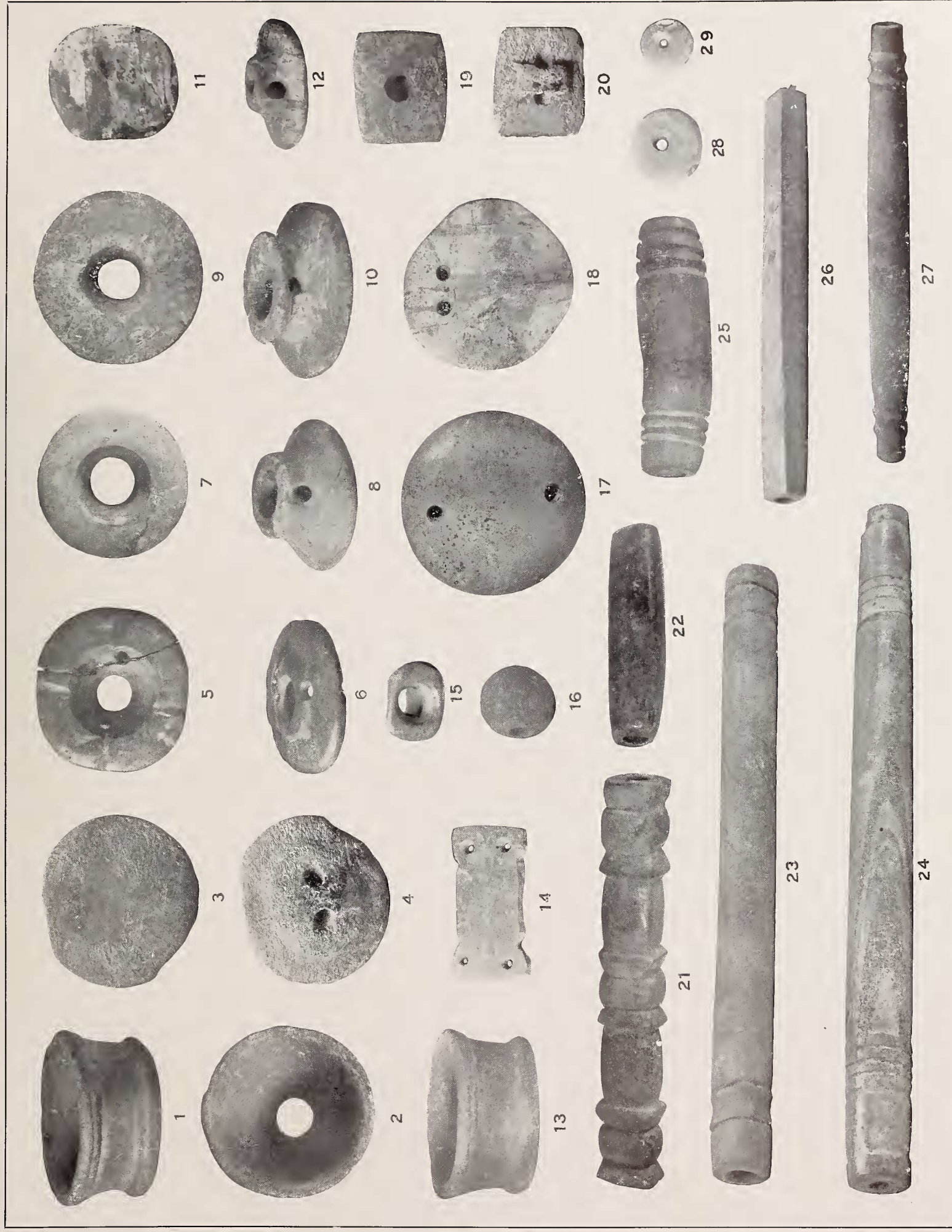
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TUBES, BUTTONS, AND OTHER SMALL OBJECTS OF STONE FROM LAS GUACAS CONTAINED IN THE VELASCO COLLECTIONS OF THE CARNEGIE MUSEUM AND THE NATIONAL MUSEUM OF COSTA RICA.

EXPLANATION OF PLATE XLIII.

(All figures full size.)

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OBJECTS OF JADE FROM COSTA RICA

EXPLANATION OF PLATE XLIV.

(All figures full size.)

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OBJECTS OF JADE FROM COSTA RICA

EXPLANATION OF PLATE XLV.

(All figures full size.)

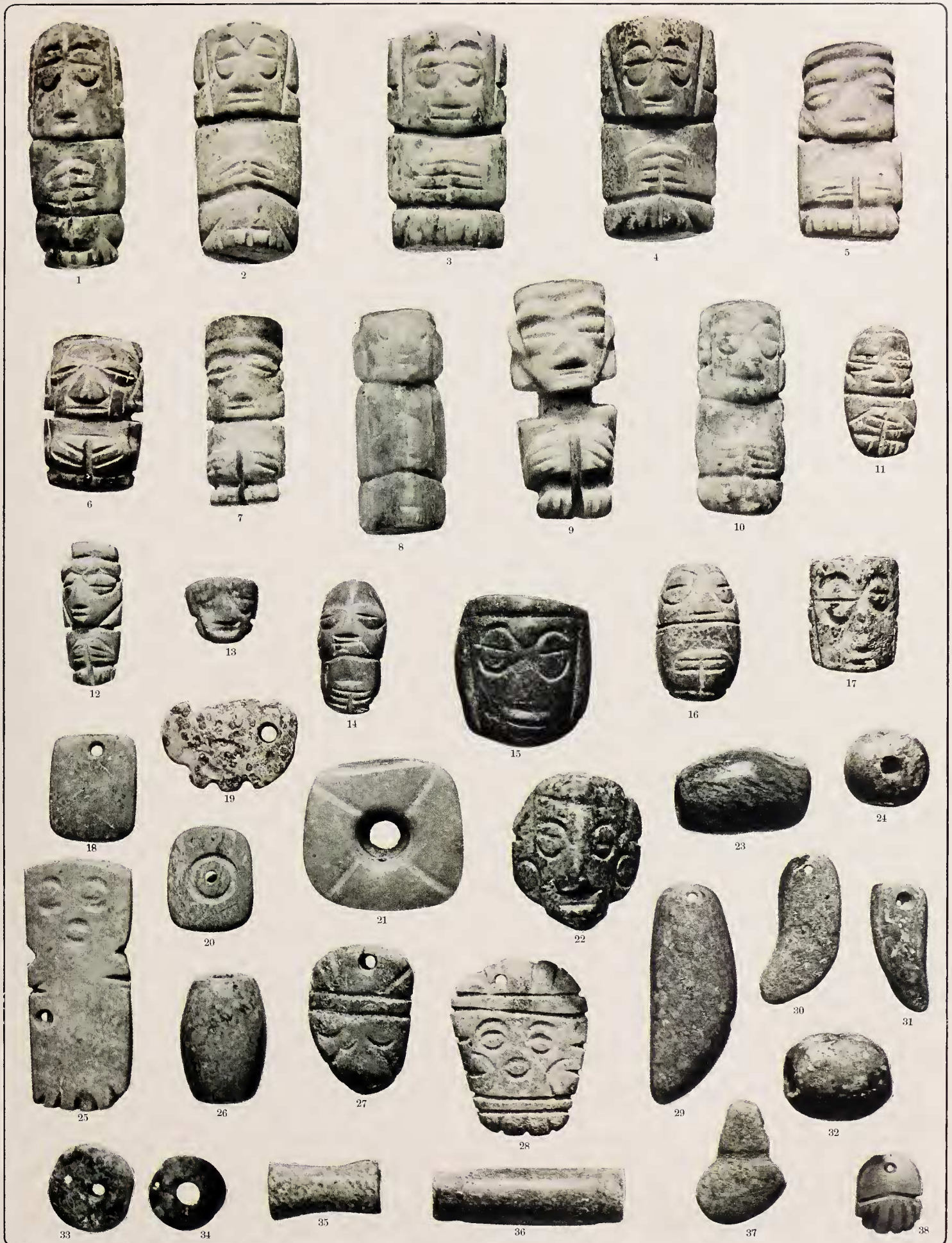
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FIG. 1. Amulet of jadeite. (Cat. No. $\frac{2939}{1251}$)	88
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OBJECTS OF JADE FROM COSTA RICA

EXPLANATION OF PLATE XLVI.

Amulets, beads and an ear-ornament of jade from the state of Oaxaca. All figures are full size. For description see pp. 90-92.



OBJECTS OF JADE FROM MEXICO

EXPLANATION OF PLATE XLVII.

Map of excavations made by C. V. Hartman in the burial ground at Las Guacas.



DIAGRAM OF EXCAVATIONS IN BURIAL GROUND AT LAS GUACAS.